

**JPMORGAN CHASE & Co.****Notes Linked to One or More Reference Currencies (Each Relative to a Base Currency), Commodities, Commodity Futures Contracts or Commodity Indices****JPMORGAN CHASE FINANCIAL COMPANY LLC****Notes, Fully and Unconditionally Guaranteed by JPMorgan Chase & Co., Linked to One or More Reference Currencies (Each Relative to a Base Currency), Commodities, Commodity Futures Contracts or Commodity Indices****General**

- Each of JPMorgan Chase & Co. and JPMorgan Chase Financial Company LLC may from time to time offer and sell notes that are linked to one or more Reference Currencies (each relative to a Base Currency), Commodities, Commodity Futures Contracts or Commodity Indices (each, as defined below). Investing in the notes is not equivalent to investing (or taking a short position) directly in any Reference Currency (relative to a Base Currency), Commodity, Commodity Futures Contract or Index, the commodity underlying any Commodity Futures Contract or any of the commodity futures contracts underlying any Index.
- The notes issued by JPMorgan Chase & Co. are unsecured and unsubordinated obligations of JPMorgan Chase & Co. **Any payment on the notes issued by JPMorgan Chase & Co. is subject to the credit risk of JPMorgan Chase & Co.**
- The notes issued by JPMorgan Chase Financial Company LLC are unsecured and unsubordinated obligations of JPMorgan Chase Financial Company LLC, the payment on which is fully and unconditionally guaranteed by JPMorgan Chase & Co. **Any payment on the notes issued by JPMorgan Chase Financial Company LLC is subject to the credit risk of JPMorgan Chase Financial Company LLC, as issuer of the notes, and the credit risk of JPMorgan Chase & Co., as guarantor of the notes.**
- This product supplement describes terms that will apply generally to the notes and supplements the terms described in the prospectus supplement and the prospectus. A separate term sheet or pricing supplement, as the case may be, will describe terms that apply to specific issuances of the notes, including any changes to the terms specified below. These term sheets and pricing supplements are referred to generally in this product supplement as terms supplements. A separate underlying supplement or the relevant terms supplement will describe any Index to which the notes are linked. If the terms described in the relevant terms supplement are inconsistent with those described in this product supplement, any accompanying underlying supplement, the prospectus supplement or the prospectus, the terms described in the relevant terms supplement will govern your notes.
- The notes are not appropriate for all investors and involve a number of risks and important legal and tax consequences that should be discussed with your professional advisers.
- For important information about tax consequences relating to the notes, see “Material U.S. Federal Income Tax Consequences” beginning on page PS-72 of this product supplement.
- The notes will not be listed on any securities exchange unless otherwise specified in the relevant terms supplement.

**Key Terms**

Issuer:	The issuer of the notes, as specified in the relevant terms supplement, is referred to in this product supplement as the “ <b>Issuer</b> .” The Issuer will be either JPMorgan Chase & Co. or JPMorgan Chase Financial Company LLC.
Guarantor:	For notes issued by JPMorgan Chase Financial Company LLC, JPMorgan Chase & Co., in its capacity as guarantor of those notes, is referred to in this product supplement as the “ <b>Guarantor</b> .”
Underlyings:	Any reference currency (each, a “ <b>Reference Currency</b> ”) (each relative to a base currency (each, a “ <b>Base Currency</b> ”)), commodity (each, a “ <b>Commodity</b> ”), commodity futures contract (each, a “ <b>Commodity Futures Contract</b> ”) or index that is designed to track commodity futures contracts (each, an “ <b>Index</b> ”) referenced in the determination of any payment on the notes is referred to in this product supplement as an “ <b>Underlying</b> ” and, collectively, as the “ <b>Underlyings</b> .” See “The Underlyings” in this product supplement. <i>An investment in notes linked to a Commodity Futures Contract or an Index may not offer direct exposure to physical commodities. See “Risk Factors — Risks Relating to a Commodity Futures Contract — An investment in the notes may not offer direct exposure to physical commodities” for additional information.</i>
Payments on the Notes:	Any amount payable on the notes will be determined pursuant to the terms set forth in the relevant terms supplement. If the amount of any payment calculated as set forth in the relevant terms supplement is less than zero, the amount of that payment will be \$0. <i>For notes linked in whole or in part to a Commodity Futures Contract or an Index, the timing and amount of any payment on the notes may be affected by the occurrence of a commodity hedging disruption event. See “General Terms of Notes — Consequences of a Commodity Hedging Disruption Event” for additional information.</i>
Determination Date(s):	The relevant terms supplement will specify each date on which the value of any Underlying is to be referenced in the determination of any payment on the notes (each, a “ <b>Determination Date</b> ”). Unless otherwise specified in the relevant terms supplement, each Determination Date is subject to postponement as described under “General Terms of Notes — Postponement of a Determination Date.”
Payment Date(s):	The relevant terms supplement will specify the maturity date and any other date on which amounts will or may be payable on the notes (each, a “ <b>Payment Date</b> ”). Unless otherwise specified in the relevant terms supplement, each Payment Date is subject to postponement as described under “General Terms of Notes — Postponement of a Payment Date.”

**Investing in the notes involves a number of risks. See “Risk Factors” beginning on page S-2 of the prospectus supplement and “Risk Factors” beginning on page PS-11 of this product 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 the relevant terms supplement, this product supplement, any underlying supplement, the prospectus supplement or the prospectus. Any representation to the contrary is a criminal offense.

**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.**

**J.P.Morgan**

## TABLE OF CONTENTS

	<u>Page</u>
Risk Factor Summary.....	PS-1
Description of Notes.....	PS-3
Estimated Value and Secondary Market Prices of the Notes.....	PS-9
Risk Factors.....	PS-11
Use of Proceeds and Hedging.....	PS-42
General Terms of Notes.....	PS-44
The Underlyings.....	PS-54
Commodity Markets and Exchanges.....	PS-67
Material U.S. Federal Income Tax Consequences.....	PS-72
Plan of Distribution (Conflicts of Interest).....	PS-82
Benefit Plan Investor Considerations.....	PS-84

The Issuer and the Guarantor (if applicable) have not authorized anyone to provide any information other than that contained or incorporated by reference in the relevant terms supplement, this product supplement, any underlying supplement, the prospectus supplement or the prospectus with respect to the notes offered by the relevant terms supplement and with respect to the Issuer and the Guarantor (if applicable). The Issuer and the Guarantor (if applicable) take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. The relevant terms supplement, together with this product supplement, any underlying supplement, the prospectus supplement and the prospectus, will contain the terms of the notes and will supersede 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, fact sheets, brochures or other educational materials of the Issuer. The information in each of the relevant terms supplement, this product supplement, any underlying supplement, the prospectus supplement and the prospectus may be accurate only as of the date of that document.

The notes are not appropriate for all investors and involve a number of risks and important legal and tax consequences that should be discussed with your professional advisers. You should be aware that the regulations of Financial Industry Regulatory Authority, Inc., or FINRA, and the laws of certain jurisdictions (including regulations and laws that require brokers to ensure that investments are suitable for their customers) may limit the availability of the notes. The relevant terms supplement, this product supplement, any underlying supplement, the prospectus supplement and the prospectus do not constitute an offer to sell or a solicitation of an offer to buy the notes under any circumstances in which that offer or solicitation is unlawful.

The notes are not commodity futures contracts or swaps and are not regulated under the Commodity Exchange Act of 1936, as amended (the “**Commodity Exchange Act**”). If the notes are linked in whole or in part to an Index (as defined below), the notes are offered pursuant to an exemption from regulation under the Commodity Exchange Act, commonly known as the hybrid instrument exemption, that is available to securities that have one or more payments indexed to the value, level or rate of one or more commodities, as set out in section 2(f) of that statute. Accordingly, you are not afforded any protection provided by the Commodity Exchange Act or any regulation promulgated by the Commodity Futures Trading Commission.

In this product supplement, “JPMorgan Financial” refers to JPMorgan Chase Financial Company LLC.

## **RISK FACTOR SUMMARY**

*Your investment in the notes will involve certain risks. Set forth below is only a summary of the principal risks associated with an investment in the notes. **You should refer to the more detailed discussion of these and other risks set forth under “Risk Factors” in this product supplement, as well as the discussion of risks included in the relevant terms supplement and any accompanying underlying supplement, before you decide that an investment in the notes is appropriate for you.***

### **Risks Relating to the Notes Generally**

- The notes differ from conventional debt securities and may not pay interest or return your principal.
- The notes are subject to the credit risks of JPMorgan Financial and/or JPMorgan Chase & Co.
- As a finance subsidiary, JPMorgan Financial has no independent operations and has limited assets.
- JPMorgan Financial-issued notes will not benefit from any cross-default or cross-acceleration to other debt; a covenant default or bankruptcy, insolvency or reorganization event with respect to the Guarantor does not constitute an event of default with respect to JPMorgan Financial-issued notes.
- The appreciation potential of the notes may be limited.
- If the notes are redeemed early or accelerated, you will be exposed to reinvestment risk and may receive less than the market value of the notes.
- The notes are designed to be held to maturity and secondary trading may be limited.
- You will have no ownership rights in any Reference Currency, Base Currency, Commodity, Commodity Futures Contract or Index, the commodity underlying any Commodity Futures Contract or any of the commodity futures contracts underlying any Index.
- Concentration risks may adversely affect the value of the notes.
- For notes linked to a Commodity Futures Contract or an Index, if a commodity hedging disruption event occurs, the timing and amount of any payment on the notes could be affected.
- The notes are not regulated by the Commodity Futures Trading Commission.
- Regulatory developments and investigations may result in changes to the rules or methodology used to determine the value of an Underlying, which may adversely affect any payment on the notes.
- Market disruptions or suspensions may adversely affect your return.
- The tax consequences of an investment in the notes are uncertain.

### **Risks Relating to Conflicts of Interest**

- The Issuer, the Guarantor (if applicable) or their affiliates may have interests that are adverse to those of the holders of the notes.

### **Risks Relating to the Estimated Value and Secondary Market Prices of the Notes**

- The estimated value of the notes will be lower than the original issue price of the notes, and secondary market prices of the notes will be impacted by many economic and market factors.

### **Risks Relating to Basket Notes**

- The Basket Underlyings may not be equally weighted.
- Changes in the values of the Basket Underlyings may not be correlated and may offset each other, or changes in value may be correlated in a manner that adversely affects any payment on the notes.

### **Risks Relating to Least Performing Underlying Notes and Greatest Performing Underlying Notes**

- You are exposed to the risks associated with each Underlying.
- Any payment on the notes may be determined by reference to the performance of the Underlying that will result in the worst performance of the notes.

### **Risks Relating to Relative Performance Notes**

- The return on the notes is based on the relative performance of the Underlyings.
- Changes in the values of the Underlyings may be partially offset or entirely negated by each other.

- You are exposed to the risks associated with each Underlying.

### **Risks Relating to a Reference Currency Relative to a Base Currency**

- The notes are subject to currency exchange risk.
- The liquidity, trading value and amounts payable, if any, under the notes could be affected by the actions of the governments of any Relevant Country.
- For notes linked to a Reference Currency or Base Currency that is an emerging markets currency, the value of the notes will be subject to an increased risk of significant adverse fluctuations.
- Even though any Reference Currency or Base Currency is traded around-the-clock, if a secondary market for the notes develops, the notes may trade only during regular hours in the United States.
- The absence of last-sale and other information about any Reference Currency or Base Currency may affect the price of the notes.
- Currency exchange risks can be expected to heighten in periods of financial turmoil.
- Changes in interest rates may affect the trading value of the notes.
- Any Reference Currency or Base Currency may be replaced by another currency following a Succession Event.

### **Risks Relating to a Commodity, a Commodity Futures Contract or an Index Generally**

- Commodity futures contracts are subject to legal and regulatory regimes that may change in ways that could adversely affect the notes.
- Commodity or futures contract prices may change unpredictably, and futures contract prices may be near zero, zero or negative, in each case adversely affecting the notes.
- The relevant exchange or market has no obligation to consider your interests.
- An investment in the notes may be subject to risks associated with non-U.S. exchanges or markets.

### **Risks Relating to a Commodity Futures Contract or an Index**

- An investment in the notes may not offer direct exposure to physical commodities.
- Changes in the margin requirements for commodity futures contracts may adversely affect the notes.
- A Commodity Futures Contract or an Index may be subject to pronounced risks of pricing volatility.
- The notes will be subject to risks associated with the commodity referenced by the relevant commodity futures contracts.

### **Risks Relating to an Index**

- An Index sponsor may adjust an Index without any obligation to consider your interests.
- The reported level of an Index may include the deduction of index fees or other adjustments.
- Changes in future prices of commodity futures contracts relative to their current prices may lead to a decrease in any payment on the notes.
- The notes will be subject to risks associated with the underlying commodity futures contracts and the commodities referenced by those commodity futures contracts.

### **Risks Relating to Commodity Sectors and Individual Commodities**

- The prices of commodities are volatile and are affected by numerous factors, including sector or individual commodity risks.
- Single commodity prices tend to be more volatile than, and may not correlate with, the prices of commodities generally.
- An investment in the notes may be subject to risks associated with the London Metal Exchange or an independent service provider appointed by the London Bullion Market Association.

## DESCRIPTION OF NOTES

*The following description of the terms of the notes supplements the description of the general terms of the debt securities set forth under the headings “Description of Notes” in the prospectus supplement and “Description of Debt Securities” in the prospectus. The term “note” refers to each Principal Amount (as defined below) of the Issuer’s Notes Linked to One or More Reference Currencies (Each Relative to a Base Currency), Commodities, Commodity Futures Contracts or Commodity Indices.*

### General

The issuer of the notes, as specified in the relevant terms supplement, is referred to in this product supplement as the “**Issuer**.” The Issuer will be either JPMorgan Chase & Co. or JPMorgan Chase Financial Company LLC, which is referred to in this product supplement as “**JPMorgan Financial**.” For notes issued by JPMorgan Chase Financial Company LLC, JPMorgan Chase & Co., in its capacity as guarantor of those notes, is referred to in this product supplement as the “**Guarantor**.”

The notes issued by JPMorgan Chase & Co. are unsecured and unsubordinated obligations of JPMorgan Chase & Co. and will rank *pari passu* with all of JPMorgan Chase & Co.’s other unsecured and unsubordinated obligations. **Any payment on the notes issued by JPMorgan Chase & Co. is subject to the credit risk of JPMorgan Chase & Co.**

The notes issued by JPMorgan Financial are unsecured and unsubordinated obligations of JPMorgan Financial, the payment of which is fully and unconditionally guaranteed by JPMorgan Chase & Co. The notes will rank *pari passu* with all of JPMorgan Financial’s other unsecured and unsubordinated obligations. JPMorgan Chase & Co.’s guarantee of the notes will rank *pari passu* with all of JPMorgan Chase & Co.’s other unsecured and unsubordinated obligations. **Any payment on the notes issued by JPMorgan Financial 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.**

The notes issued by JPMorgan Chase & Co. are a series of debt securities issued by JPMorgan Chase & Co. referred to in the prospectus supplement and the prospectus and will be issued by JPMorgan Chase & Co. under an indenture dated May 25, 2001, as may be amended or supplemented from time to time, between JPMorgan Chase & Co. and Deutsche Bank Trust Company Americas (formerly Bankers Trust Company), as trustee.

The notes issued by JPMorgan Financial are a series of debt securities issued by JPMorgan Financial referred to in the prospectus supplement and the prospectus and will be issued by JPMorgan Financial under an indenture dated February 19, 2016, as may be amended or supplemented from time to time, among JPMorgan Financial, the Guarantor and Deutsche Bank Trust Company Americas, as trustee.

The notes will be represented by one or more permanent global notes registered in the name of The Depository Trust Company, or DTC, or its nominee, as described under “Description of Notes — Forms of Notes” in the prospectus supplement and “Forms of Securities — Book-Entry System” in the prospectus.

This product supplement describes terms that will apply generally to the notes and supplements the terms described in the prospectus supplement and the prospectus. A separate term sheet or pricing supplement, as the case may be, will describe terms that apply to specific issuances of the notes, including any changes to the terms specified below. These term sheets and pricing supplements are referred to generally in this product supplement as terms supplements. A separate underlying supplement or the relevant terms supplement will describe any Index (as defined below) to which the notes are linked. If the terms described in the relevant terms supplement are inconsistent with those described in this product supplement, any accompanying underlying supplement, the prospectus supplement or the prospectus, the terms described in the relevant terms supplement will govern your notes.

The notes will be issued in minimum denominations specified in the relevant terms supplement, and the principal amount of each note (the “**Principal Amount**”) and the original issue price of each note will be specified in the relevant terms supplement.

Subject to applicable law (including, without limitation, U.S. federal laws), the Issuer or its affiliates may, at any time and from time to time, purchase outstanding notes by tender, in the open market or by private agreement.

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.

### **The Underlying(s)**

The notes will be linked to one or more reference currencies (each, a “**Reference Currency**”) (each relative to a base currency (each, a “**Base Currency**”), commodities (each, a “**Commodity**”), commodity futures contracts (each, a “**Commodity Futures Contract**”) or indices that are designed to track commodity futures contracts (each, an “**Index**”) as specified in the relevant terms supplement. Any Reference Currency (relative to a Base Currency), Commodity, Commodity Futures Contract or Index referenced in the determination of any payment on the notes is referred to in this product supplement as an “**Underlying**” and, collectively, as the “**Underlyings**.” See “The Underlyings” below for additional information.

*An investment in notes linked to a Commodity Futures Contract or an Index may not offer direct exposure to physical commodities. See “Risk Factors — Risks Relating to a Commodity Futures Contract — An investment in the notes may not offer direct exposure to physical commodities” for additional information.*

The relevant terms supplement will specify the manner in which the Underlying(s) will be referenced in the determination of any payment on the notes. Payments on the notes may reflect long (or bullish) exposure to one or more Underlyings (meaning that an increase in the value of the relevant Underlying(s) would generally be expected to have a positive effect on payments on the notes) and/or short (or bearish) exposure to one or more Underlyings (meaning that a decrease in the value of the relevant Underlying(s) would generally be expected to have a positive effect on payments on the notes).

In addition, the notes may be Single Underlying Notes, Basket Notes, Least Performing Underlying Notes, Greatest Performing Underlying Notes or Relative Performance Notes or the relevant terms supplement may specify that, in the determination of any payments on the notes, the Underlyings will be referenced in a manner that does not directly correspond with any of these types of notes.

*Single Underlying Notes.* “**Single Underlying Notes**” reference the performance of a single Underlying in the determination of one or more payments on the notes.

*Basket Notes.* “**Basket Notes**” reference the performance of a weighted basket composed of two or more Underlyings (a “**Basket**”) in the determination of one or more payments on the notes.

*Least Performing Underlying Notes.* “**Least Performing Underlying Notes**” reflect long (or bullish) exposure to the Underlying with the lowest performance out of the Underlyings specified in the relevant terms supplement in the determination of one or more payments on the notes. Payments on Least Performing Underlying Notes will generally be determined by reference to the performance of the Underlying that would result in the worst performance of the notes.

*Greatest Performing Underlying Notes.* “**Greatest Performing Underlying Notes**” reflect short (or bearish) exposure to the Underlying with the highest performance out of the Underlyings specified in the relevant terms supplement in the determination of one or more payments on the notes. Payments on Greatest Performing Underlying Notes will generally be determined by reference to the performance of the Underlying that would result in the worst performance of the notes.

*Relative Performance Notes.* “**Relative Performance Notes**” reference the relative performance of two or more Underlyings, with long exposure to one or more Underlyings (each, a “**Long Underlying**”) and short exposure to one or more other Underlying(s) (each, a “**Short Underlying**”), in the determination of one or more payments on the notes.

### ***Terms Relating to Valuation of the Underlying(s)***

The relevant terms supplement will specify the manner in which the initial value, the final value and, if applicable, the strike value of Underlying(s) will be determined. The relevant terms sheet will also specify the manner in which values of the Underlying(s) will be used in the determination of any payment on the notes.

*Initial Value.* The relevant terms supplement will specify the manner in which the initial value of any Underlying will be determined. For example, with respect to any Underlying, the relevant terms supplement may specify that the initial value of that Underlying will be determined by reference to the value of that Underlying on the pricing date or on multiple dates near the beginning of the term of the notes or may specify that the initial value will be equal to a fixed value. Unless otherwise specified in the relevant terms supplement, the initial value of any Underlying will be determined near the beginning of the term of the notes and will be used in determining the performance of that Underlying or as a reference point against which later values of that Underlying will be compared.

*Final Value.* The relevant terms supplement will specify the manner in which the final value of any Underlying with respect to any day will be determined. For example, with respect to any Underlying, the relevant terms supplement may specify that the final value of that Underlying will be determined by reference to the value of that Underlying on that day or on multiple dates during the term of the notes. Unless otherwise specified in the relevant terms supplement, the final value of any Underlying with respect to any day will be determined after the determination of the initial value and will be used in determining the performance of that Underlying or as a reference point to be compared to the initial value of that Underlying or to other values specified in the relevant terms supplement.

*Strike Value.* The relevant terms supplement may specify a value to be used instead of, or in addition to, the initial value of an Underlying to be used in determining the performance of that Underlying or as a reference point against which later values of that Underlying will be compared. If applicable, the relevant terms supplement will specify the manner in which the strike value of any Underlying will be determined. For example, with respect to any Underlying, the relevant terms supplement may specify a fixed value for the strike value of that Underlying or may specify that the strike value of that Underlying will be equal to a specified percentage of the initial value of that Underlying.

*Determination Dates.* The relevant terms supplement will specify each date on which the value of any Underlying is to be referenced in the determination of any payment on the notes (each, a “**Determination Date**”). Unless otherwise specified in the relevant terms supplement, each Determination Date is subject to postponement as described under “General Terms of Notes — Postponement of a Determination Date” below.

See “The Underlyings” in this product supplement for a description of how the value of each Underlying will be determined. Each Underlying and the value of each Underlying are subject to adjustment under certain circumstances. See “General Terms of Notes — Postponement of a Determination Date” and “The Underlyings” below for additional information.

### **Payments on the Notes**

Any amount payable on the notes will be determined pursuant to the terms set forth in the relevant terms supplement. If the amount of any payment calculated as set forth in the relevant terms supplement is less than zero, the amount of that payment will be \$0. *Any payment on the notes is subject to the credit risks of the Issuer and, with respect to notes issued by JPMorgan Financial, the Guarantor.*

*For notes linked in whole or in part to a Commodity Futures Contract or an Index, the timing and amount of any payment on the notes may be affected by the occurrence of a commodity hedging disruption event. See “General Terms of Notes — Consequences of a Commodity Hedging Disruption Event” for additional information.*

The relevant terms supplement will specify the maturity date and any other date on which amounts will or may be payable on the notes (each, a “**Payment Date**”). Unless otherwise specified in the relevant terms supplement, each Payment Date is subject to postponement as described under “General Terms of Notes — Postponement of a Payment Date” below.

The “**calculation agent**” or “**note calculation agent**” is the agent appointed by the Issuer to make certain calculations with respect to the notes, which, unless otherwise specified in the relevant terms supplement, will be J.P. Morgan Securities LLC (“**JPMS**”). See “General Terms of Notes — Calculation Agent” below. JPMS is an affiliate of the Issuer and, with respect to notes issued by JPMorgan Financial, the Guarantor and, accordingly, may have interests adverse to yours. Please see “Risk Factors — Risks Relating to Conflicts of Interest — The Issuer, the Guarantor (if applicable) or their affiliates may have economic interests that are adverse to those of the holders of the notes due to JPMS’s role as calculation agent.”

The Issuer will irrevocably deposit with DTC no later than the opening of business on the applicable date or dates funds sufficient to make payments of the amount, if any, payable with respect to the notes on the applicable date or dates. The Issuer will give DTC irrevocable instructions and authority to pay the applicable amount to the holders of the notes entitled thereto.

### ***Interest Payments***

If the relevant terms supplement specifies that the notes will bear periodic interest, the notes will pay interest in arrears at the per annum rate, or such other rate or rates, including rates that reference the performance of the Underlying(s), as specified in the relevant terms supplement. The relevant terms supplement may also specify that the payment of interest is contingent on the performance of the Underlying(s).

Unless otherwise specified in the relevant terms supplement, the interest payment due on each interest payment date specified in the relevant terms supplement for each note, if payable under the terms specified in the relevant terms supplement, will be calculated as follows:

$$\text{Principal Amount} \times \text{Interest Rate} \times 1 / \text{number of interest payment dates per year}$$

where the number of interest payment dates per year is determined by the frequency of the interest payment dates and how many interest payment dates would occur over the course of a full year regardless of the actual term of the notes.

If the payment of interest is not contingent on the performance of the Underlying(s), interest will accrue from and including the issue date of the notes to but excluding the maturity date or the date on which the notes are redeemed or repurchased early, if applicable. Unless otherwise specified in the relevant terms supplement, interest will be payable in arrears on each interest payment date to and including the maturity date or the date on which the notes are redeemed or repurchased early, if applicable, to the holders of record at the close of business on the business day prior to that interest payment date.

### ***Payment upon Early Redemption, Acceleration or Early Repurchase***

The relevant terms supplement may specify that the notes will be subject to early redemption or acceleration or that investors may submit a request for the Issuer to repurchase the notes. **No further payments will be made on the notes after they have been redeemed early, accelerated or repurchased early.**



*Optional Redemption.* If the relevant terms supplement specifies that the notes include an optional redemption feature, the Issuer will have the right, at its election, to redeem the notes in whole but not in part on any of the dates specified in the relevant terms supplement for a cash payment that will be determined as set forth in the relevant terms supplement. If the Issuer intends to redeem your notes, the Issuer will deliver notice to DTC, as holder of the notes, at least such number of business days specified in the relevant terms supplement prior to the date on which the notes are to be redeemed.

*Automatic Redemption.* If the relevant terms supplement specifies that the notes include an automatic redemption feature, the notes will be automatically redeemed under the circumstances set forth in the relevant terms supplement for a cash payment that will be determined as set forth in the relevant terms supplement on a Payment Date specified in the relevant terms supplement.

*Acceleration.* If the relevant terms supplement specifies that the notes include an acceleration feature, the maturity date and the determination of the payment at maturity will be accelerated under the circumstances set forth in the relevant terms supplement and in the manner set forth in the relevant terms supplement.

*Early Repurchase.* If the relevant terms supplement specifies that the notes include an early repurchase feature, you may submit a request to have the Issuer repurchase your notes, subject to the procedures and terms set forth below. **Any repurchase request that the Issuer accepts in accordance with the procedures and terms set forth below will be irrevocable. While the Issuer intends to accept all requests for early repurchase of notes that comply with the procedures and terms set forth below, it is not obligated to accept any repurchase request. The Issuer is not committed to purchasing any note at any particular time or price.**

Unless otherwise specified in the relevant terms supplement, to request that the Issuer repurchase your notes, you must instruct your broker or other person through which you hold your notes to take the following steps:

- Send a notice of repurchase, substantially in the form attached as Annex A to the relevant terms supplement (a “**Repurchase Notice**”), to the Issuer via email at [dl\\_n\\_repurchase@jpmchase.com](mailto:dl_n_repurchase@jpmchase.com) by no later than 4:00 p.m., New York City time, on the business day prior to the relevant Determination Date. The subject line of the email should include the title of the notes and the CUSIP for those notes. The Issuer or its affiliate must acknowledge receipt of the Repurchase Notice on the same business day for it to be effective, which acknowledgment will be deemed to evidence its acceptance of your repurchase request;
- Instruct your DTC custodian to book a delivery versus payment trade with respect to your notes on the relevant Determination Date at a price equal to the amount payable upon early repurchase of the notes; and
- Cause your DTC custodian to deliver the trade as booked for settlement via DTC at or prior to 10:00 a.m., New York City time, on the day on which the notes will be repurchased.

Different brokerage firms may have different deadlines for accepting instructions from their customers. Accordingly, you should consult the brokerage firm through which you own your interest in the notes in respect of those deadlines. Unless otherwise specified in the relevant terms supplement, if the Issuer does not receive your Repurchase Notice by 4:00 p.m. on the business day prior to the relevant Determination Date OR the Issuer (or its affiliates) does not acknowledge receipt of the Repurchase Notice on the same day, your Repurchase Notice will not be effective, and the Issuer will not repurchase your notes. Once given, a Repurchase Notice may not be revoked.

The calculation agent will, in its sole discretion, resolve any questions that may arise as to the validity of a Repurchase Notice and the timing of receipt of a Repurchase Notice or as to whether and when the required deliveries have been made. Questions about the repurchase requirements should be directed to [dl\\_n\\_repurchase@jpmchase.com](mailto:dl_n_repurchase@jpmchase.com).

***Payment at Maturity***

The relevant terms supplement will specify the manner in which any payment at maturity will be determined. **You may lose some or all of your principal amount at maturity.**

## **ESTIMATED VALUE AND SECONDARY MARKET PRICES OF THE NOTES**

### **The Estimated Value of the Notes**

Unless otherwise specified in the relevant terms supplement, the estimated value of the notes when the terms of the notes are set, which is referred to as the estimated value of the notes, will be set forth on the cover of the relevant terms supplement and will be 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 will 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.

For notes issued by JPMorgan Chase & Co. or JPMorgan Financial, the internal funding rate used in the determination of the estimated value of the notes will be the Issuer's internal funding rate for structured debt, which will generally represent a discount from the credit spreads for JPMorgan Chase & Co.'s conventional fixed-rate debt. This internal funding rate reflects the higher issuance, operational and liability management costs of the notes in comparison to those costs for the conventional fixed-rate debt of JPMorgan Chase & Co. For additional information, see "Risk Factors — Risks Relating to the Estimated Value and Secondary Market Prices of the Notes — The estimated value of the notes will be derived by reference to an internal funding rate and will not be determined by reference to credit spreads for JPMorgan Chase & Co.'s conventional fixed-rate debt" below in this product supplement.

The value of the derivative or derivatives underlying the economic terms of the notes will be derived from internal pricing models of the Issuer's 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, correlation, interest rates and other factors, as well as assumptions about future market events and/or environments. Accordingly, the estimated value of the notes will be determined when the terms of the notes are set based on market conditions and other relevant factors and assumptions existing at that time. See "Risk Factors — Risks Relating to the Estimated Value and Secondary Market Prices of the Notes — The estimated value of the notes will not represent future values of the notes and may differ from others' estimates" below in this product supplement.

Unless otherwise specified in the relevant terms supplement, 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 will be included in the original issue price of the notes. These costs include the selling commissions and structuring fees, if any, paid to JPMS and other affiliated or unaffiliated dealers, the projected profits, if any, that the Issuer's affiliates expect to realize for assuming risks inherent in hedging its obligations under the notes and the estimated cost of hedging its obligations under the notes. Because hedging the Issuer's obligations entails risk and may be influenced by market forces beyond its control, this hedging may result in a profit that is more or less than expected, or it may result in a loss. The Issuer or one or more of its affiliates will retain any profits realized in hedging the Issuer's obligations under the notes unless a portion of the hedging profits is allowed to other affiliated or unaffiliated dealers. Under those circumstances, the Issuer or one or more of its affiliates will retain any remaining hedging profits. See "Risk Factors — Risks Relating to the Estimated Value and Secondary Market Prices of the Notes — The estimated value of the notes will be lower than the original issue price (price to public) of the notes" below in this product 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" below in this product supplement. In addition, the relevant terms supplement may specify that the Issuer will generally expect some of the costs included in the original issue price of the notes to 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 that will be specified in the relevant terms supplement. The length of any such initial period will reflect the structure of the notes, whether the Issuer's affiliates expect to earn a profit in connection with the Issuer's hedging activities, the estimated costs of hedging the notes and when these costs are incurred, all as determined by JPMS. See "Risk Factors — Risks Relating to the Estimated Value and Secondary Market Prices of the Notes — 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" below in this product supplement.

## RISK FACTORS

*Your investment in the notes will involve certain risks. Unless otherwise specified in the relevant terms supplement, the notes do not pay interest and do not guarantee any return of principal at, or prior to, maturity. Investing in the notes is not equivalent to investing (or taking a short position) directly in any Reference Currency, Base Currency, Commodity, Commodity Futures Contract or Index, the commodity underlying any Commodity Futures Contract or any of the commodity futures contracts underlying any Index. In addition, your investment in the notes entails other risks not associated with an investment in conventional debt securities. **You should consider carefully the following discussion of risks, as well as the discussion of risks included in the relevant terms supplement and any accompanying underlying supplement, before you decide that an investment in the notes is appropriate for you.***

### **Risks Relating to the Notes Generally**

**The notes differ from conventional debt securities and may not pay interest or return any of your principal amount.**

Any amount payable on the notes will be determined pursuant to the terms set forth in the relevant terms supplement. The notes will not pay interest unless specified in the relevant terms supplement. The relevant terms supplement may specify that you may lose some or all of your principal amount at maturity. Even if the relevant terms supplement provides for payment of at least your principal amount at maturity (subject to the credit risks of the Issuer and the Guarantor (if applicable)), you may receive no return on your investment at maturity or the return on your investment at maturity may be less than the amount that would be paid on a conventional debt security of comparable maturity. Under these circumstances, you will not be compensated or fully compensated for any loss in value due to inflation and other factors relating to the value of money over time.

**The notes issued by JPMorgan Chase & Co. are subject to the credit risk of JPMorgan Chase & Co.**

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

**The notes issued by JPMorgan Financial are subject to the credit risks of JPMorgan Financial and the Guarantor.**

The notes issued by JPMorgan Financial are 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. JPMorgan Financial's and the Guarantor's credit ratings and credit spreads may adversely affect the market value of the notes. Investors in notes issued by JPMorgan Financial are dependent on its ability and on the ability of the Guarantor to pay all amounts due on the notes. Any actual or potential change in JPMorgan Financial's or the Guarantor's creditworthiness or the credit spreads, as determined by the market for taking that credit risk, is likely to affect adversely the value of the notes. Any payment on the notes issued by JPMorgan Financial is subject to its creditworthiness and the creditworthiness of the Guarantor. If JPMorgan Financial and the Guarantor were to default on their 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., JPMorgan Financial has no independent operations beyond the issuance and administration of its securities. Aside from the initial capital contribution from JPMorgan Chase & Co., substantially all of the assets of JPMorgan Financial are expected to relate to obligations of one or more of its affiliates to make payments under loans made by JPMorgan Financial or under other intercompany agreements with JPMorgan Financial. As a result, JPMorgan Financial's ability to make payments in respect of the notes is limited. JPMorgan Financial is dependent upon payments from one or more of its affiliates under intercompany loans and other intercompany agreements to meet its obligations under the notes it issues. If these affiliates do not make payments to JPMorgan Financial and JPMorgan Financial fails to make payments on the notes, holders of the notes 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.

**Notes issued by JPMorgan Financial will not have the benefit of any cross-default or cross-acceleration with other indebtedness of JPMorgan Financial or the Guarantor; a covenant default or bankruptcy, insolvency or reorganization event with respect to the Guarantor does not constitute an event of default with respect to notes issued by JPMorgan Financial.**

Unless otherwise stated in the applicable terms supplement, the notes issued by JPMorgan Financial will not have the benefit of any cross-default or cross-acceleration with other indebtedness of JPMorgan Financial or the Guarantor. In addition, a covenant default by the Guarantor, or an event of bankruptcy, insolvency or reorganization of the Guarantor, does not constitute an event of default with respect to any notes issued by JPMorgan Financial.

**The appreciation potential of the notes may be limited.**

The relevant terms supplement may specify that the return or payment at maturity on the notes in excess of the principal amount will not exceed a specified value. Under these circumstances, the appreciation potential of the notes will be limited to that specified value, regardless of the performance of the Underlying(s). In addition, if the relevant terms supplement specifies that the notes will or may pay interest, the appreciation potential of the notes may be limited to any interest payments, regardless of the performance of the Underlying(s).

**The Issuer, the Guarantor (if applicable) or their affiliates may have interests that are adverse to those of the holders of the notes.**

The Issuer, the Guarantor (if applicable) or their affiliates may have interests that are adverse to those of the holders of the notes. See “— Risks Relating to Conflicts of Interest” below.

**If the notes are redeemed early or accelerated, you will be exposed to reinvestment risk.**

The term of the notes may be limited by any optional or automatic redemption or acceleration feature set forth in the relevant terms supplement. No further payments will be made on the notes after they have been redeemed early or accelerated. If the notes are redeemed early or accelerated, the term of your investment in the notes will be limited to a period that is shorter than the original term of the notes. There is no guarantee that you would be able to reinvest the proceeds from an investment in the notes at a comparable return for a similar level of risk in the event that the notes are redeemed early or accelerated.

**The payment upon an early redemption or acceleration may be substantially less than the market value of the notes.**

If the notes include an optional or automatic redemption or acceleration feature, the notes may be redeemed early or accelerated at a time when prevailing interest rates are relatively low or at a time when

the performance of the Underlying(s) has caused the value of the notes to increase substantially since issuance. Accordingly, any payment upon early redemption or acceleration determined in the manner set forth in the relevant terms supplement may be substantially less than the market value of the notes.

**If the relevant terms supplement provides for early repurchases at the option of the holders, there will be restrictions on your ability to request that the Issuer repurchase your notes.**

Unless otherwise specified in the relevant terms supplement, if you elect to request that the Issuer repurchase your notes, your request will be valid only if the Issuer receives your Repurchase Notice by 4:00 p.m., New York City time, on the business day prior to the relevant Determination Date and the Issuer (or its affiliates) acknowledges receipt of the Repurchase Notice that same day (which will evidence its acceptance of your repurchase request). If the Issuer does not receive that notice or the Issuer (or its affiliates) does not acknowledge receipt of that notice (which means that the Issuer has declined to accept your repurchase request), your repurchase request will not be effective and the Issuer will not repurchase your notes.

Because of the timing requirements of the Repurchase Notice (and the Issuer's acknowledgment of receipt), settlement of the repurchase will be prolonged when compared to a sale and settlement in the secondary market. As your request that the Issuer repurchase your notes is irrevocable, this will subject you to market risk in the event that the market fluctuates after the Issuer receives your request. Furthermore, if the Issuer accepts your repurchase request, its obligation to repurchase the notes prior to maturity may be postponed upon the occurrence of a market disruption event.

**If the relevant terms supplement provides for early repurchases at the option of the holders, you will not know the amount you will receive upon an early repurchase at the time you elect to request that the Issuer repurchase your notes.**

You will not know the amount payable upon early repurchase at the time you elect to request that the Issuer repurchase your notes. As a result, you will be exposed to market risk in the event that the market fluctuates after the Issuer accepts your repurchase request and prior to the date on which the payment you will receive upon repurchase is determined.

**The values of the Underlying(s) will be referenced only on the Determination Date(s) for purposes of determining any payment on the notes.**

The relevant terms supplement will specify each Determination Date on which the value of any Underlying is to be referenced in the determination of any payment on the notes. The value of the notes and any payment on the notes may be adversely affected by referencing the values of the Underlying(s) only on Determination Dates. For example, for notes that provide for a single payment at maturity based on the long (or bullish) performance of an Underlying, as measured from the pricing date to a single Determination Date near the end of the term of the notes, if the value of that Underlying increases or remains relatively constant during the initial term of the notes and then decreases below the initial value of that Underlying, the final value of that Underlying may be significantly less than if it were calculated on a date earlier than the Determination Date. Under these circumstances, you may receive a lower return on the notes than you would have received if you had invested directly in any Reference Currency, Base Currency, Commodity, Commodity Futures Contract or Index, the commodity underlying any Commodity Futures Contract or any of the commodity futures contracts underlying any Index or any exchange-traded or over-the-counter instruments based on any of the foregoing.

**The estimated value of the notes will be lower than the original issue price (price to public) of the notes, and secondary market prices of the notes will be impacted by many economic and market factors.**

The estimated value of the notes will be lower than the original issue price (price to public) of the notes, and secondary market prices of the notes will be impacted by many economic and market factors. See “— Risks Relating to the Estimated Value and Secondary Market Prices of the Notes” below.

**The notes are designed to be held to maturity.**

The notes are not designed to be short-term trading instruments. The price at which you will be able to sell your notes to the Issuer or its affiliates prior to maturity, if at all, may be at a substantial discount from the principal amount of the notes, even in cases where any Underlying to which the notes provide long (or bullish) exposure has appreciated from its initial value (or its strike value, if applicable) and/or any Underlying to which the notes provide short (or bearish) exposure has depreciated from its initial value (or its strike value, if applicable). The potential returns described in the relevant terms supplement assume that your notes are held to maturity unless redeemed or repurchased early or accelerated, if applicable.

**Secondary trading may be limited.**

Unless otherwise specified in the relevant terms supplement, the notes will not be listed on any securities exchange. There may be little or no secondary market for the notes. Even if there is a secondary market for the notes, it may not provide enough liquidity to allow you to trade or sell the notes easily.

JPMS may act as a market-maker for the notes, but is not required to do so. Because the Issuer does not expect that other market-makers will participate significantly in the secondary market for the notes, 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. If at any time JPMS or another agent does not act as a market-maker, it is likely that there would be little or no secondary market for the notes.

**If the value of an Underlying changes, the market value of your notes may not change proportionately.**

Owning the notes is not the same as investing (or taking a short position) directly in any Reference Currency, Base Currency, Commodity, Commodity Futures Contract or Index, the commodity underlying any Commodity Futures Contract or any of the commodity futures contracts underlying any Index. Accordingly, changes in the value of an Underlying may not result in a proportionate change in the market value of the notes. For example, for notes that provide long (or bullish) exposure to an Underlying, if the value of that Underlying on any day has increased, the value of the notes may not increase comparably, if at all. It is possible for the value of that Underlying to increase moderately while the value of those notes declines.

**You will have no ownership rights in any Reference Currency, Base Currency, Commodity, Commodity Futures Contract or Index, the commodity underlying any Commodity Futures Contract or any of the commodity futures contracts underlying any Index.**

Investing in the notes is not equivalent to investing (or taking a short position) directly in any Reference Currency, Base Currency, Commodity, Commodity Futures Contract or Index, the commodity underlying any Commodity Futures Contract or any of the commodity futures contracts underlying any Index or exchange-traded or over-the-counter instruments based on any of the foregoing. As an investor in the notes, you will not have any ownership interests or rights in any of the foregoing.

**Concentration risks may adversely affect the value of the notes.**

If any payment on the notes will be based on the performance of a single Reference Currency (relative to a Base Currency), Commodity, Commodity Futures Contract or Index or on a small number of Reference Currencies (each relative to a Base Currency) or a small number of Commodities, Commodity Futures Contracts or Indices that are concentrated in a single or a limited number of commodities, you will not benefit, with respect to the notes, from the advantages of a diversified investment, and you will bear the risks of a concentrated investment, including the risk of greater volatility than may be experienced in connection with a diversified investment. You should be aware that other investments may be more diversified than the notes in terms of the number and variety of currencies and/or commodities.



**For notes linked in whole or in part to a Commodity Futures Contract or an Index, if a commodity hedging disruption event occurs, the timing and amount of any payment on the notes could be affected.**

For notes linked in whole or in part to a Commodity Futures Contract or an Index, upon the occurrence of legal or regulatory changes that the calculation agent determines have interfered with the Issuer's or its affiliates' ability to hedge its obligations under the notes, or if for any other reason the Issuer or its affiliates are unable to enter into or maintain hedge positions that the calculation agent deems necessary to hedge the Issuer's obligations under the notes, the Issuer may, in its sole and absolute discretion, adjust the timing and amount of any payment on the notes as described below. If a commodity hedging disruption event occurs, the value of the notes and any payment on the notes may be adversely affected. See "General Terms of Notes — Consequences of a Commodity Hedging Disruption Event" and "— Risks Relating to Underlyings Generally — Commodity Futures Contracts and the commodity futures contracts underlying an Index are subject to legal and regulatory regimes that may change in ways that could have a substantial adverse effect on the value of the notes and, for notes linked to an Index, could affect the timing and amount of any payment on the notes" below.

*For notes that are linked in whole or in part to a Commodity Futures Contract or an Index and that provide for a payment at maturity for each note of the Principal Amount (or the Principal Amount reduced by a percentage specified in the relevant terms supplement)*

If a commodity hedging disruption event occurs, the Issuer will have the right, but not the obligation, to cease making further interest payments (if applicable) and to adjust your payment at maturity based on determinations made by the calculation agent. If a commodity hedging disruption event occurs and the Issuer chooses to exercise this right, for each note, the Issuer will pay you at maturity, instead of the amount set forth in the relevant terms supplement, an amount equal to:

- the Principal Amount (or the Principal Amount reduced by the percentage specified in the relevant terms supplement, if applicable) *plus*
- the Option Value of your notes, determined as described under "General Terms of Notes — Consequences of a Commodity Hedging Disruption Event — Adjustment of Payments on the Notes."

Under these circumstances, the Option Value will be payable only at maturity and will not reflect any appreciation or depreciation of the Underlying(s) after the date on which the calculation agent determines that a commodity hedging disruption event has occurred, which is referred to in this product supplement as a commodity hedging disruption date. You will not receive further interest payments, if applicable, or any other amounts (related to the Option Value or otherwise) until maturity. If a commodity hedging disruption event ceases to exist, the amounts determined on the commodity hedging disruption date will not be subsequently revised. See "General Terms of Notes — Consequences of a Commodity Hedging Disruption Event — Adjustment of the Payment at Maturity."

*For notes that are linked in whole or in part to a Commodity Futures Contract or an Index and that do not provide for a payment at maturity for each note of the Principal Amount (or the Principal Amount reduced by a percentage specified in the relevant terms supplement)*

If a commodity hedging disruption event occurs, the Issuer may, in its sole and absolute discretion, accelerate the payment on your notes and pay you an amount determined in good faith and in a commercially reasonable manner by the calculation agent. If a commodity hedging disruption event occurs and the Issuer decides to exercise its right to accelerate the payment on your notes, your investment may result in a loss and you may not be able to reinvest the proceeds in a comparable investment. See "General Terms of Notes — Consequences of a Commodity Hedging Disruption Event — Acceleration of the Notes."

## **The notes are not regulated by the Commodity Futures Trading Commission (the “CFTC”).**

The net proceeds to be received by the Issuer from the sale of the notes will not be used to purchase or sell any futures contracts or options on futures contracts for your benefit. An investment in the notes thus does not constitute either an investment in futures contracts or options on futures contracts or an investment in a collective investment vehicle that trades in these futures contracts (i.e., the notes will not constitute a direct or indirect investment by you in the futures contracts), and you will not benefit from the regulatory protections of the CFTC. Among other things, this means that the Issuer and the Guarantor (if applicable) are not registered with the CFTC as a futures commission merchant and you will not benefit from the CFTC’s or any other non-U.S. regulatory authority’s regulatory protections afforded to persons who trade in futures contracts on a regulated futures exchange through a registered futures commission merchant. For example, the price you pay to purchase notes will be used by the Issuer for its own purposes and will not be subject to customer funds segregation requirements provided to customers that trade futures on an exchange regulated by the CFTC.

Unlike an investment in the notes, an investment in a collective investment vehicle that invests in futures contracts on behalf of its participants may be subject to regulation as a commodity pool, and its operator may be required to register with and be regulated by the CFTC as a commodity pool operator, or qualify for an exemption from the registration requirement. Because the notes will not be interests in a commodity pool, the notes will not be regulated by the CFTC as a commodity pool, the Issuer and the Guarantor (if applicable) will not be registered with the CFTC as a commodity pool operator and you will not benefit from the CFTC’s or any non-U.S. regulatory authority’s regulatory protections afforded to persons who invest in regulated commodity pools.

## **Regulatory developments and investigations may result in changes to the rules or methodology used to determine the value of an Underlying, which may adversely affect any payment on the notes.**

The methodologies used to determine the value of certain “benchmarks,” which may include one or more Underlyings, are the subject of recent national, international and other regulatory guidance, proposals for reform and investigations. These reforms or changes made in response to these investigations may cause those benchmarks to perform differently than in the past and may have other consequences that cannot be predicted. In addition, market participants may elect not to continue to participate in the administration of certain benchmarks if these reforms and investigations increase the costs and risks associated with those activities, which could cause changes in the rules or methodologies used in certain benchmarks or lead to the disappearance of certain benchmarks. Any of these changes could adversely affect the value of the notes and any payment on the notes.

## **Market disruptions may adversely affect your return.**

The calculation agent may, in its sole discretion, determine that the markets have been affected in a manner that prevents it from determining the value of any Underlying on any Determination Date and the amount of any payment on the notes. These events may include disruptions or suspensions of trading in the markets as a whole. If the calculation agent, in its sole discretion, determines that any of these events prevents the Issuer or any of its affiliates from properly hedging the Issuer’s obligations under the notes, it is possible that one or more Determination Dates and Payment Dates will be postponed and that your return will be adversely affected. Market disruption events are defined in the relevant sections of “The Underlyings” below. In addition, if any Determination Date is postponed to the last possible day and the value of any Underlying is not available on that day because of a market disruption event or because that date is not a trading day, the calculation agent will nevertheless determine the value of that Underlying on that last possible day. See “General Terms of Notes — Postponement of a Determination Date” and “General Terms of Notes — Postponement of a Payment Date” for more information.

**The tax consequences of an investment in the notes are uncertain.**

There is no direct legal authority as to the proper U.S. federal income tax treatment of certain of the notes, and the Issuers do not intend to request a ruling from the Internal Revenue Service (the “IRS”) regarding the notes. The IRS might not accept, and a court might not uphold, the Issuer’s treatment of an offering of notes, in which case the timing and/or character of income on these notes could be affected materially and adversely. The relevant terms supplement will describe the tax treatment of a particular offering of notes.

In addition, in 2007 the IRS issued a revenue ruling holding that a financial instrument issued and redeemed for U.S. dollars, but providing a return determined by reference to a foreign currency and related market interest rates, is a debt instrument denominated in the foreign currency. The revenue ruling, or future guidance relating thereto, could materially and adversely affect the tax consequences for U.S. investors of an investment in notes linked to one or more Reference Currencies that the Issuer does not treat as indebtedness for U.S. federal income tax purposes, possibly with retroactive effect. Both U.S. and non-U.S. investors should review carefully the section entitled “Material U.S. Federal Income Tax Consequences” in this product supplement and consult their tax advisers regarding the U.S. federal income tax consequences of an investment in the notes, including possible alternative treatments.

**Historical performance of any Underlying should not be taken as an indication of the future performance of that Underlying during the term of the notes.**

The actual performance of any Underlying over the term of the notes, as well as any payment on the notes, may bear little relation to the historical performance of that Underlying. The future performance of any Underlying may differ significantly from its historical performance, and no assurance can be given as to the value of any Underlying during the term of the notes, including on any Determination Date. It is impossible to predict whether the value of any Underlying will rise or fall. There is no assurance that the performance of the Underlying(s) will not adversely affect any payment on the notes.

**Employees of JPMorgan Chase & Co. or one of its affiliates, including JPMorgan Financial, holding the notes must comply with policies that limit their ability to purchase or sell the notes.**

If you are an employee of JPMorgan Chase & Co. or one of its affiliates, including JPMorgan Financial, you may acquire the notes only for investment purposes, and you must comply with all of JPMorgan Chase & Co.’s internal policies and procedures. Because these policies and procedures limit the dates and times that you may transact in the notes, you may not be able to purchase the notes from the Issuer, and your ability to trade or sell the notes in the secondary market may be limited.

**Risks Relating to Conflicts of Interest**

**The Issuer’s offering of the notes does not constitute an expression of its views (or the Guarantor’s views, if applicable) about, or a recommendation of, any Reference Currency, Base Currency, Commodity, Commodity Futures Contract or Index, the commodity underlying any Commodity Futures Contract or any of the commodity futures contracts underlying any Index.**

You should not take the Issuer’s offering of the notes as an expression of its views (or the Guarantor’s views, if applicable) about how any Reference Currency, Base Currency, Commodity, Commodity Futures Contract or Index, the commodity underlying any Commodity Futures Contract or any of the commodity futures contracts underlying any Index will perform in the future or as a recommendation to invest (directly or indirectly, by taking a long or short position) in any of the foregoing, including through an investment in the notes. As a global financial institution, the Issuer, the Guarantor (if applicable) and their affiliates may, and often do, have positions (long, short or both) in one or more of the foregoing that conflict with an investment in the notes. See “— The Issuer, the Guarantor (if applicable) or their affiliates may have economic interests that are adverse to those of the holders of the notes as a result of their hedging and other trading activities” below and “Use of Proceeds and Hedging” in this product supplement for some examples of potential conflicting positions the Issuer may have. You should

undertake an independent determination of whether an investment in the notes is appropriate for you in light of your specific investment objectives, risk tolerance and financial resources.

**The Issuer, the Guarantor (if applicable) or their affiliates may have economic interests that are adverse to those of the holders of the notes as a result of their hedging and other trading activities.**

In anticipation of the sale of the notes, the Issuer expects to hedge its obligations under the notes through certain affiliates or unaffiliated counterparties by taking positions in one or more Reference Currencies, Base Currencies, Commodities or Commodity Futures Contracts or the commodities underlying the Commodity Futures Contracts or the commodity futures contracts underlying the Indices or related currency exchange rates, instruments the value of which is derived from one or more Reference Currencies, Base Currencies, Commodities, Commodity Futures Contracts or Indices, the commodities underlying one or more Commodity Futures Contracts or the commodity futures contracts underlying one or more Indices or related currency exchange rates. The Issuer may also adjust its hedge by, among other things, purchasing or selling any of the foregoing at any time and from time to time and close out or unwind its hedge by selling any of the foregoing on or before any Determination Date. These hedging activities may be undertaken on a portfolio basis with respect to some or all of the Issuer's, the Guarantor's (if applicable) and their affiliates' exposure to specific commodities and/or commodity futures contracts (including exposure unrelated to the notes). By hedging on a portfolio basis, the Issuer may hedge its entire obligations, a portion of its obligations or none of its obligations, and the amount of its hedge may change at any time. In addition, JPMS and other affiliates of the Issuer or the Guarantor (if applicable) also trade the foregoing on a regular basis (taking long or short positions or both), for their accounts, for other accounts under their management and to facilitate transactions, including block transactions, on behalf of customers. While the Issuer cannot predict an outcome, any of these hedging or other trading activities could potentially affect the value of the Underlying(s) and may adversely affect the value of the notes or any payment on the notes. See "Use of Proceeds and Hedging" below for additional information about the Issuer's hedging activities.

This hedging and trading activity may present a conflict of interest between your interests as a holder of the notes and the interests of the Issuer's affiliates in hedging and other trading activities. These hedging and trading activities could also affect the price at which JPMS is willing to purchase your notes in the secondary market. In addition, the Issuer's hedging counterparties expect to make a profit. Because hedging the Issuer's obligations entails risk and may be influenced by market forces beyond its control, this hedging may result in a profit that is more or less than expected, or it may result in a loss. It is possible that these hedging or trading activities could result in substantial returns for the Issuer or its affiliates while the value of the notes declines.

**The Issuer, the Guarantor (if applicable) or their affiliates may have economic interests that are adverse to those of the holders of the notes as a result of their business activities.**

In the course of the Issuer's or the Guarantor's (if applicable) business, it or its affiliates may acquire nonpublic information about one or more Reference Currencies, Base Currencies, Commodities, Commodity Futures Contracts or Indices, the commodities underlying one or more Commodity Futures Contracts or the commodity futures contracts underlying one or more Indices or currency exchange rates relating to any of the foregoing, and the Issuer will not disclose any such information to you.

In addition, the Issuer, the Guarantor (if applicable) or one of their affiliates may serve as issuer, agent or underwriter for issuances of other securities or financial instruments with returns linked or related to changes in the value of a Reference Currency, a Base Currency, a Commodity, a Commodity Futures Contract or an Index, the commodity underlying a Commodity Futures Contract or the commodity futures contracts underlying an Index. To the extent that the Issuer, the Guarantor (if applicable) or one of their affiliates serves as issuer, agent or underwriter for these securities or financial instruments, the Issuer, the Guarantor (if applicable) or their affiliate's interests with respect to these securities or financial instruments may be adverse to those of the holders of the notes. By introducing competing products into

the marketplace in this manner, the Issuer, the Guarantor (if applicable) or one or more of their affiliates could adversely affect the value of the notes.

The value of one or more Underlyings may be determined in whole or in part by reference to the value of a benchmark that is established based on quotes, prices, values or other data provided by market participants, including, in some cases, the Issuer, the Guarantor (if applicable) or their affiliates. In addition, the Issuer, the Guarantor (if applicable) or their affiliates may take part in, or have a supervisory role in connection with, the administration of certain benchmarks. The Issuer, the Guarantor (if applicable) and their affiliates will have no obligation to consider your interests as a holder of the notes in taking any actions that might affect the value of any Underlying or the notes.

**The Issuer, the Guarantor (if applicable) or their affiliates may have economic interests that are adverse to those of the holders of the notes due to JPMS's role as calculation agent.**

JPMS, one of the Issuer's and the Guarantor's (if applicable) affiliates, will act as the calculation agent. The calculation agent makes all necessary calculations and determinations in connection with the notes, including with respect to any payments on the notes and the assumptions used to determine the pricing and estimated value of the notes. In performing these duties, JPMS may have interests adverse to the interests of the holders of the notes, which may affect your return on the notes, particularly where JPMS, as the calculation agent, is entitled to exercise discretion. See "General Terms of Notes — Postponement of a Determination Date" and "The Underlyings" in this product supplement.

**JPMS and its affiliates may have published research, expressed opinions or provided recommendations that are inconsistent with investing in or holding the notes or that may adversely affect the value of the notes, and may do so in the future.**

JPMS and its affiliates may publish research reports, express opinions or provide recommendations from time to time that relate to one or more Reference Currencies, Base Currencies, Commodities, Commodity Futures Contracts or Indices, the commodities underlying one or more Commodity Futures Contracts or the commodity futures contracts underlying one or more Indices or currency exchange rates relating to any of the foregoing. These research reports, opinions or recommendations may be inconsistent with purchasing or holding the notes and could adversely affect the value of the notes. Any research, opinions or recommendations expressed by JPMS or its affiliates may not be consistent with each other and may be modified from time to time without notice. Investors should make their own independent investigation of the merits of investing in the notes and any Underlying to which the notes are linked.

### **Risks Relating to the Estimated Value and Secondary Market Prices of the Notes**

**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. Unless otherwise specified in the relevant terms supplement, 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 and structuring fees, if any, the projected profits, if any, that the Issuer's affiliates expect to realize for assuming risks inherent in hedging its obligations under the notes and the estimated cost of hedging its obligations under the notes. See "Estimated Value and Secondary Market Prices of the Notes — The Estimated Value of the Notes" above in this product supplement.

**The estimated value of the notes will not represent future values of the notes and may differ from others' estimates.**

The estimated value of the notes will be determined by reference to the internal pricing models of one or more of the Issuer's affiliates when the terms of the notes are set. This estimated value of the notes

will be based on market conditions and other relevant factors existing at that time and assumptions about market parameters, which can include volatility, correlation, interest rates and other factors. Different pricing models and assumptions could provide valuations for notes that are greater than or less than the estimated value of the notes. In addition, market conditions and other relevant factors may change after the estimated value of the notes has been determined, and any assumptions may prove to be incorrect. The value of the notes could change significantly after the estimated value of the notes has been determined based on, among other things, changes in market conditions, the Issuer's or the Guarantor's (if applicable) 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. See "Estimated Value and Secondary Market Prices of the Notes — The Estimated Value of the Notes" above in this product supplement.

**The estimated value of the notes will be derived by reference to an internal funding rate and will not be determined by reference to credit spreads for JPMorgan Chase & Co.'s conventional fixed-rate debt.**

The internal funding rate used in the determination of the estimated value of the notes will generally represent a discount from the credit spreads for JPMorgan Chase & Co.'s conventional fixed-rate debt. The discount is based on, among other things, the Issuer's and its affiliates' internal 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 JPMorgan Chase & Co.'s conventional fixed-rate debt. If the interest rate implied by JPMorgan Chase & Co.'s conventional fixed-rate credit spreads were used, the Issuer would expect the economic terms of the notes to be more favorable to you. In addition, the estimated value of the notes might be lower if it were based on the interest rate implied by JPMorgan Chase & Co.'s conventional fixed-rate credit spreads. Consequently, the use of an internal funding rate would have an adverse effect on the terms of the notes and any secondary market prices of the notes. See "Estimated Value and Secondary Market Prices of the Notes — The Estimated Value of the Notes" above in this product 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.**

The relevant terms supplement may specify that the Issuer will 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. These costs can include selling commissions and structuring fees, if any, projected hedging profits, if any, and, in some circumstances, estimated hedging costs and the Issuer's internal secondary market funding rates for structured debt issuances. See "Estimated Value and Secondary Market Prices of the Notes — Secondary Market Prices of the Notes" above in this product supplement. 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 the Issuer's internal secondary market funding rates for structured debt issuances, and, also, because secondary market prices (a) exclude selling commissions and structuring fees, if any, and (b) may exclude 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 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. See the immediately following risk factor for information about additional factors that will impact any secondary market prices of the notes.

## **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 and structuring fees, if any, projected hedging profits, if any, estimated hedging costs and the value of the Underlying(s), including:

- any actual or potential change in the Issuer's creditworthiness or credit spreads and, for notes issued by JPMorgan Financial, the Guarantor's creditworthiness or credit spreads;
- customary bid-ask spreads for similarly sized trades;
- the Issuer's internal secondary market funding rates for structured debt issuances;
- the actual and expected frequency and magnitude of changes in the value of any Underlying (*i.e.*, volatility);
- prevailing market prices, volatility and liquidity of any option or futures contracts relating to any Underlying;
- the time to maturity of the notes;
- supply and demand trends and market prices at any time for the commodity underlying any Commodity Futures Contract or any futures contract underlying any Index;
- interest and yield rates in the market generally, as well as in the originating countries or economic regions of any Reference Currency or Base Currency, if applicable;
- economic, financial, political, regulatory, geographical, agricultural, meteorological or judicial events that affect any Underlying, currency or commodity markets generally or the originating countries or economic regions of any Reference Currency or Base Currency, if applicable; and
- for notes linked to two or more Underlyings, changes in correlation (the extent to which the values of the Underlyings increase or decrease to the same degree at the same time) between the Underlyings.

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.

Some or all of these factors will influence the price you will receive if you choose to sell your notes prior to maturity. The impact of any of the factors set forth above may enhance or offset some or all of any change resulting from another factor or factors. You may have to sell your notes at a substantial discount from the principal amount.

## **Risks Relating to Basket Notes**

### **The Underlyings included in a Basket may not be equally weighted.**

If so specified in the relevant terms supplement, the Underlyings included in a Basket may have different weights in determining the value of the Basket. For example, the relevant terms supplement may specify that the Basket consists of five Underlyings and that the weights of the Underlyings are 25%, 30%, 15%, 20% and 10%. One consequence of an unequal weighting of the Underlyings is that the same percentage change in two of the Underlyings may have different effects on the value of the Basket. For example, if the weight for Underlying A is greater than the weight for Underlying B, a 5% decrease in

the value of Underlying A will have a greater effect on the value of the Basket than a 5% decrease in the value of Underlying B.

**The weights of the Underlyings included in a Basket may be determined on a date other than the pricing date.**

If so specified in the relevant terms supplement, the weights of the Underlyings included in a Basket may be determined on a date or dates other than the pricing date. For example, the relevant terms supplement may specify that the weights of the Underlyings will be determined based on the relative magnitude of the return of each Underlying as of the final Determination Date. As a result, if the relevant terms supplement so specifies, you will not know the weight assigned to each Underlying until a date later than the pricing date, and you may not know the weight assigned to each Underlying in the Basket prior to the final Determination Date.

**Changes in the values of the Underlyings included in a Basket may not be correlated and may offset each other, or changes in value may be correlated in a manner that adversely affects any payment on the notes.**

Movements in the values of the Underlyings included in a Basket may not be correlated with each other. For notes that provide long (or bullish) exposure to the Basket, at a time when the value of one or more of the Underlyings increases, the value of the other Underlyings may not increase as much or may even decline. Therefore, in calculating the performance of the Basket, increases in the value of one or more of the Underlyings may be moderated, or more than offset, by lesser increases or declines in the value of the other Underlying or Underlyings, particularly if the Underlying or Underlyings that appreciate are of relatively low weight in the Basket. In addition, high correlation of movements in the values of the Underlyings during periods of negative returns among the Underlyings could have an adverse effect on any payment on the notes.

Similarly, for notes that provide short (or bearish) exposure to the Basket, at a time when the value of one or more of the Underlyings decreases, the value of the other Underlyings may not decrease as much or may even increase. Therefore, in calculating the performance of the Basket, declines in the value of one or more of the Underlyings may be moderated, or more than offset, by lesser declines or increases in the value of the other Underlying or Underlyings, particularly if the Underlying or Underlyings that depreciate are of relatively low weight in the Basket. In addition, high correlation of movements in the values of the Underlyings during periods of positive returns among the Underlyings could have an adverse effect on any payment on the notes.

**Risks Relating to Least Performing Underlying Notes and Greatest Performing Underlying Notes**

**You are exposed to the risks associated with each Underlying.**

The return on Least Performing Underlying Notes or Greatest Performing Underlying Notes is contingent upon the individual performance of each Underlying and not the performance of a basket of the Underlyings. Unlike an instrument with a return linked to a basket of underlying assets, in which risk is diversified among all the components of the basket, you will be exposed equally to the risks related to any of the Underlyings. The performance of the Underlyings may not be correlated, and the performance of any one of the Underlyings over the term of the notes may negatively affect any payment on the notes and will not be offset by the performance of any or all of the other Underlyings. Accordingly, your investment is subject to the risks associated with each Underlying.

**Any payment on the notes may be determined by reference to the performance of the Underlying that will result in the worst performance of the notes.**

Any payment on the notes may be determined by reference to the performance of the Underlying that will result in the worst performance of the notes, and you will not benefit from the performance of any other Underlying. For example, for Least Performing Underlying Notes, which provide long (or bullish)



exposure, any payment on the notes may be determined solely by reference to the Underlying with the lowest return. Similarly, for Greatest Performing Underlying Notes, which provide short (or bearish) exposure, any payment on the notes may be determined solely by reference to the Underlying with the highest return. Accordingly, the performance of a single Underlying can adversely affect the value of the notes and any payment on the notes, regardless of the performance of any other Underlying.

### **Risks Relating to Relative Performance Notes**

**The return on the notes is based on the relative performance of the Underlyings.**

You may receive a lower return on the notes than you could receive by taking directly a long position in the Long Underlying(s) or a short position in the Short Underlying(s). Unlike a long position in the Long Underlying(s) or a short position in the Short Underlying(s), you may not earn a positive return even if each Long Underlying appreciates or each Short Underlying depreciates over the term of the notes. Unless otherwise specified in the relevant terms supplement, it is possible that you will not earn a positive return when all the Underlyings appreciate or when all the Underlyings depreciate, if, in either case, the return of the Long Underlying(s) is less than the return of the Short Underlying(s). The notes will be linked to the performance of the Long Underlying(s) as compared to the performance of the Short Underlying(s) and thus are affected by the relative, not absolute, performance of the Underlyings. Unless otherwise specified in the relevant terms supplement, in order to receive a positive return on the notes, the return of the Long Underlying(s) must be greater than the return of the Short Underlying(s), in each case calculated as set forth in the relevant terms supplement.

**Changes in the value of any Long Underlying may be partially offset or entirely negated by changes in the value of any Short Underlying.**

Changes in the value of any Long Underlying may be partially offset or entirely negated by changes in the value of any Short Underlying. If the returns of the Underlyings are strongly correlated, you may not receive a positive return on the notes, unless otherwise specified in the relevant terms supplement. Conversely, if the returns of the Underlyings are not correlated, your investment will be exposed to the return of the Long Underlying(s) relative to the return of the Short Underlying(s), in each case calculated as set forth in the relevant terms supplement. Your notes may not generate a positive return even if the return of the Long Underlying is positive or the return of the Short Underlying is negative.

**You are exposed to the risks associated with each Underlying.**

The return on Relative Performance Notes is contingent upon the individual performance of each Underlying and not the performance of a basket of the Underlyings. Unlike an instrument with a return linked to a basket of underlying assets, in which risk is diversified among all the components of the basket, you will be exposed equally to the risks related to all of the Underlyings. Poor performance by the Long Underlying(s) or strong performance by the Short Underlying(s) over the term of the notes may negatively affect your return on the notes. Accordingly, your investment is subject to the risks associated with each Underlying.

### **Risks Relating to a Reference Currency Relative to a Base Currency**

**The notes are subject to currency exchange risk.**

Foreign currency exchange rates vary over time, and may vary considerably during the term of the notes. The value of a Reference Currency or Base Currency is at any moment a result of the supply and demand for that Reference Currency or Base Currency, as applicable. Changes in foreign currency exchange rates over time result from the interaction of many factors directly or indirectly affecting economic and political conditions in the country or economic region the lawful currency of which is that Reference Currency (each, a “**Reference Currency Country**”), the country or economic region the lawful currency of which is that Base Currency (each, a “**Base Currency Country**” and each Reference

Currency Country and Base Currency Country, a “**Relevant Country**”) and other relevant countries or regions.

Of particular importance to potential currency exchange risk are:

- existing and expected rates of inflation;
- existing and expected interest rate levels;
- the balance of payments in any Relevant Country and between each country and its major trading partners;
- political, civil or military unrest in any Relevant Country; and
- the extent of governmental surplus or deficit in any Relevant Country.

All of these factors are, in turn, sensitive to the monetary, fiscal and trade policies pursued by any Relevant Country and those of other countries important to international trade and finance.

**The liquidity, trading value and amounts payable, if any, under the notes could be affected by the actions of the governments of any Relevant Country.**

Foreign exchange rates can be fixed by a sovereign government, allowed to float within a range of exchange rates set by that government or left to float freely. Exchange rates of most economically developed nations are permitted to fluctuate in value relative to the value of other currencies. However, governments do not always allow their currencies to float freely in response to economic forces. Governments use a variety of techniques, such as intervention by their central bank or imposition of regulatory controls or taxes, to affect the exchange rates of their respective currencies. Governments may also issue a new currency to replace an existing currency, fix the exchange rate or alter the exchange rate or relative exchange characteristics by devaluation or revaluation of a currency. Thus, a special risk in purchasing the notes is that their trading value and any amount payable on the notes could be affected by the actions of sovereign governments, fluctuations in response to other market forces and the movement of currencies across borders.

Unless that event constitutes a market disruption event or a Succession Event, there will be no adjustment or change in the terms of the notes in the event that exchange rates become fixed, or in the event of any devaluation or revaluation or imposition of exchange or other regulatory controls or taxes or in the event of other developments affecting any Reference Currency or Base Currency or any other currency. See “The Underlyings — Currencies — Market Disruption Events for a Reference Currency Relative to a Base Currency” and “The Underlyings — Currencies — Succession Events.”

**For notes linked to a Reference Currency or Base Currency that is an emerging markets currency, the value of the notes will be subject to an increased risk of significant adverse fluctuations.**

Emerging markets currencies may be subject to higher volatility than major currencies, especially in environments of risk aversion and deleveraging. With respect to any emerging or developing nation, there is a greater possibility of nationalization, expropriation or confiscation, political changes, government regulation and social instability. Currencies of emerging economies are often subject to more frequent and larger central bank interventions than the currencies of developed countries and are also more likely to be affected by drastic changes in monetary or exchange rate policies of the relevant countries, which may negatively affect the value of the notes. Global events, even if not directly applicable to an emerging markets country or its currency, may increase volatility or adversely affect the value of your notes.

**Even though any Reference Currency or Base Currency is traded around-the-clock, if a secondary market for the notes develops, the notes may trade only during regular hours in the United States.**

The interbank market for any Reference Currency or Base Currency is a global, around-the-clock market and the value of any Reference Currency or Base Currency is quoted 24 hours a day. Therefore, the hours of trading for the notes, if any, will not conform to the hours during which any Reference Currency or Base Currency is traded. Consequently, significant price and rate movements may take place in the underlying foreign exchange markets, and thus in the relevant Spot Rate, that will not be reflected immediately in the market price, if any, of the notes.

**The absence of last-sale and other information about any Reference Currency or Base Currency may affect the price of the notes.**

There is no systematic reporting of last-sale information for foreign currencies. Reasonably current bid and offer information is available in certain brokers' offices, in bank foreign currency trading offices and to others who wish to subscribe for this information, but this information will not necessarily be reflected in any Spot Rate, and therefore any payment on the notes. There is no regulatory requirement that those quotations be firm or revised on a timely basis. The absence of last-sale information and the limited availability of quotations to individual investors may make it difficult for many investors to obtain timely, accurate data about the state of the underlying foreign exchange markets.

In addition, certain relevant information relating to any Relevant Country may not be as well-known or as rapidly or thoroughly reported in the United States as comparable United States developments. Prospective purchasers of the notes should be aware of the possible lack of availability of important information that can affect the value of any Reference Currency or Base Currency and must be prepared to make special efforts to obtain that information on a timely basis.

**Currency exchange risks can be expected to heighten in periods of financial turmoil.**

In periods of financial turmoil, capital can move quickly out of regions that are perceived to be more vulnerable to the effects of the crisis than others, with sudden and severely adverse consequences to the currencies of those regions. In addition, governments around the world, including the United States government and governments of other major world currencies, have recently made, and may be expected to continue to make, very significant interventions in their economies, and sometimes directly in their currencies. Those interventions affect currency exchange rates globally and, in particular, the value of any Reference Currency or Base Currency. Further interventions, other government actions or suspensions of actions, as well as other changes in government economic policy or other financial or economic events affecting the currency markets, may cause currency exchange rates to fluctuate sharply in the future, which could have a material adverse effect on the value of the notes and any return on your investment in the notes.

**Changes in interest rates may affect the trading value of the notes.**

Changes in interest rates are expected to affect the trading value of the notes. In general, if interest rates in a Base Currency Country increase or interest rates in a Reference Currency Country decrease, the applicable Base Currency is expected to appreciate relative to the applicable Reference Currency. Conversely, if the interest rates in a Base Currency Country decrease or interest rates in a Reference Currency Country increase, the applicable Reference Currency is expected to appreciate relative to the applicable Base Currency.

Interest rates may affect the economies of a Relevant Country, and, in turn, the exchange rates and therefore the value of a Reference Currency or Base Currency. The impact of changes in interest rates in any Relevant Country may either offset or magnify changes in interest rates in any other Relevant Country.

**Suspensions or disruptions of market trading in the currency markets may adversely affect any amount payable on the notes and/or the market value of the notes.**

The currency markets are subject to temporary distortions or other disruptions due to various factors, including the participation of speculators and government regulation and intervention. These circumstances could affect the value of any Reference Currency or Base Currency and, therefore, the amount of any payment on the notes and/or the market value of the notes.

**Any Reference Currency or Base Currency may be replaced by another currency following a Succession Event.**

If a Reference Currency or Base Currency is lawfully eliminated and replaced with, converted into, redenominated as, or exchanged for, another currency; or any Relevant Country divides into two or more countries or economic regions, each with a different lawful currency immediately after that event (each such event, a “**Succession Event**”), that Reference Currency or Base Currency will be replaced with another currency (a “**Successor Currency**”). In the event of a Succession Event, you will become subject to the performance of the Successor Currency instead of the Reference Currency or Base Currency it replaces. In addition, for notes linked to multiple Reference Currencies and/or multiple Base Currencies, if any Reference Currency or Base Currency is replaced with a Successor Currency that is the same as another Reference Currency or Base Currency, your exposure to that Reference Currency or Base Currency, as applicable, may be effectively increased. You should read “The Underlyings — Currencies — Succession Events” in order to understand these and other adjustments that may be made to your notes. The occurrence of a Succession Event and the consequent adjustments may materially and adversely affect the value of the notes.

**Risks Relating to a Commodity, a Commodity Futures Contract or an Index Generally**

**Commodity Futures Contracts and the commodity futures contracts underlying an Index are subject to legal and regulatory regimes that may change in ways that could have a substantial adverse effect on the value of the notes and, for notes linked to an Index, could affect the timing and amount of any payment on the notes.**

Futures contracts and options on futures contracts markets, including Commodity Futures Contracts and the futures contracts underlying an Index, are subject to extensive regulation and margin requirements. The CFTC and the exchanges on which those futures contracts trade are authorized to take extraordinary actions in the event of a market emergency, including, for example, the retroactive implementation of speculative position limits or higher margin requirements, the establishment of daily limits and the suspension of trading. Furthermore, certain exchanges have regulations that limit the amount of fluctuation in futures contract prices that may occur. These limits could adversely affect the market prices of relevant futures contracts and forward contracts. The regulation of commodity transactions in the United States is subject to ongoing modification by governmental and judicial action. In addition, various non-U.S. governments have expressed concern regarding the disruptive effects of speculative trading in the commodity markets and the need to regulate the derivative markets in general. The effect on the value of the notes of any future regulatory change is impossible to predict but could be substantial and adverse to the interests of noteholders.

Notably, with respect to agricultural and exempt commodities as defined in the Commodity Exchange Act (generally, physical commodities such as agricultural commodities, energy commodities and metals) the CFTC has authority to establish limits on the number of positions, other than bona fide hedge positions, that may be held by any person in a commodity through futures contracts, options on futures contracts and other related derivatives, such as swaps, that are economically equivalent to those contracts. In addition, designated contract markets and swap execution facilities, as defined in the Commodity Exchange Act, are authorized to establish and enforce position limits or position accountability requirements on their own markets or facilities, which must be at least as stringent as the CFTC’s where CFTC limits also apply.

In October 2020, the CFTC adopted rules to establish revised or new position limits on 25 agricultural, metals and energy commodity derivatives contracts. The limits will apply to a number of Commodity Futures Contracts and commodity futures contracts that may be included in an Index, such as CBOT Soybeans, Soybean Meal and Wheat futures; ICE Futures US Cotton No. 2, Sugar No. 11 and Sugar No. 16 futures; NYMEX Light Sweet Crude Oil, NYMEX NY Harbor USLD Heating Oil, NY Harbor Gasoline Blendstock and Henry Hub Natural Gas futures; and COMEX Gold, Silver and Copper futures and NYMEX Palladium futures. The limits would apply to a person's combined position in the specified 25 futures contracts and options on futures ("core referenced futures contracts"), futures and options on futures directly or indirectly linked to the core referenced futures contracts, and economically equivalent swaps. These rules will come into effect on January 1, 2022 for covered futures and options on futures contracts and January 1, 2023 for covered swaps. The rules may reduce liquidity in the exchange-traded market for those commodity-based futures contracts, which may, in turn, have an adverse effect on any payments on the notes.

For notes linked in whole or in part to a Commodity Futures Contract or an Index, upon the occurrence of legal or regulatory changes that the calculation agent determines have interfered with the Issuer's or its affiliates' ability to hedge its obligations under the notes, including under the CFTC position limit rules mentioned above, or if for any other reason the Issuer or its affiliates are unable to enter into or maintain hedge positions the calculation agent deems necessary to hedge the Issuer's obligations under the notes, the Issuer may adjust the timing and amount of any payment on the notes. See "— Risks Relating to the Notes Generally — For notes linked in whole or in part to a Commodity Futures Contract or an Index, if a commodity hedging disruption event occurs, the timing and amount of any payment on the notes could be affected" above.

**Prices for the commodities or commodity futures contracts referenced by an Underlying may change unpredictably, and commodity futures contract prices may be near zero, zero or negative, in each case affecting the value of the notes in unanticipated ways.**

Market prices of commodities tend to be highly volatile and may fluctuate rapidly based on numerous factors, including: changes in supply and demand relationships, governmental programs and policies, national and international monetary, trade, political and economic events, wars and acts of terror, changes in interest and exchange rates, speculation and trading activities in commodities and related contracts, weather, and agricultural, trade, fiscal and exchange control policies. The price volatility of each commodity also affects the value of the futures and forward contracts related to that commodity and therefore its price at any such time. The price of any one commodity may be correlated to a greater or lesser degree with any other commodity and factors affecting the general supply and demand as well as the prices of other commodities may affect the particular commodity in question. The commodities markets are subject to temporary distortions or other disruptions due to various factors, including the lack of liquidity in the markets, the participation of speculators and government regulation and intervention. Many commodities are also highly cyclical. These factors, some of which are specific to the nature of each such commodity, may affect the value of an Underlying in varying ways, and different factors may cause the values of different commodities or commodity futures contracts referenced by one or more Underlyings to move in inconsistent directions at inconsistent rates. This, in turn, will affect the value of the notes. It is not possible to predict the aggregate effect of all or any combination of these factors.

In addition, prices of commodity futures contracts may be near zero, zero or negative, which can occur rapidly and unexpectedly. For example, in April 2020, the collapse of demand for fuel following government restrictions on travel contributed to an oversupply of crude oil that rapidly filled most available oil storage facilities. Storage shortages meant that market participants who had contracted to buy and take delivery of crude oil were therefore at risk of default under the terms of the May 2020 NYMEX West Texas Intermediate ("WTI") crude oil futures contract. The critical scarcity of storage forced some market participants to sell their futures contracts at a negative price (effectively paying another market participant to accept delivery of the crude oil referenced by the relevant contracts). As a result, for the first time in history, crude oil futures contracts traded below zero. On April 20, 2020, the last trading day before expiration of the May 2020 WTI crude oil futures contract, prices of that contract fell to negative \$37.63. If

any Commodity Futures Contract or any commodity futures contract referenced by an Index reaches a near-zero, zero or negative price, the market value of and return on the notes could be adversely affected, potentially severely and in unanticipated ways, and you may lose a significant portion, perhaps all, of your investment in the notes.

Each Underlying provides one avenue for exposure to commodities. The high volatility and cyclical nature of commodity markets may render these investments inappropriate as the focus of an investment portfolio. See “— Risks Relating to Commodity Sectors and Individual Commodities” for additional information about factors affecting the value of specific commodity sectors and commodities.

**The relevant exchange or market has no obligation to consider your interests.**

The relevant exchange or market is responsible for determining the official settlement price, offer price or fixing price, as applicable, for a commodity or commodity futures contract reference by an Underlying. The relevant exchange or market may alter, discontinue or suspend calculation or dissemination of the official settlement price, offer price or fixing price, as applicable, for the commodity or commodity futures contract reference by that Underlying. Any of these actions could adversely affect the value of the notes. The relevant exchange or market has no obligation to consider your interests in calculating or revising the official settlement price, offer price or fixing price, as applicable, for that commodity or commodity futures contract.

**An investment in the notes may be subject to risks associated with the non-U.S. exchanges or markets.**

The notes may be linked in whole or in part to a commodity whose price is determined by the London Metal Exchange (the “**LME**”) (Aluminum, Copper, Lead, Nickel and Zinc), the London Bullion Market Association (the “**LBMA**”) or an independent service provider appointed by the LBMA (Gold, Silver, Platinum and Palladium) or to a commodity futures contract that is traded on ICE Futures Europe (Brent Crude). Investments in securities linked to the value of commodities whose prices are determined by non-U.S. markets or commodity futures contracts that are traded on non-U.S. exchanges involve risks associated with the markets in those countries, including risks of volatility in those markets and governmental intervention in those markets.

**Risks Relating to a Commodity Futures Contract or an Index**

**An investment in the notes may not offer direct exposure to physical commodities.**

If the notes are linked to a Commodity Futures Contract or an Index composed of futures contracts on a commodity, the notes will reflect, in whole or in part, the return on those commodity futures contracts, not the return on the physical commodities underlying those commodity futures contracts. The price of a futures contract reflects the expected value of the commodity upon delivery in the future, whereas the spot price of a commodity reflects the immediate delivery value of the commodity. A variety of factors can lead to a disparity between the expected future price of a commodity and the spot price at a given point in time, such as the cost of storing the commodity for the term of the futures contract, interest charges incurred to finance the purchase of the commodity and expectations concerning supply and demand for the commodity. The price movements of a futures contract are typically correlated with the movements of the spot price of the reference commodity, but the correlation is generally imperfect, and price movements in the spot market may not be reflected in the futures market (and vice versa). Accordingly, the notes may underperform a similar investment that reflects the return on physical commodities.

**Suspension or disruptions of market trading in relevant commodity and related futures markets may adversely affect the value of the notes.**

The commodity markets are subject to temporary distortions or other disruptions due to various factors, including the lack of liquidity in the markets, the participation of speculators and government regulation and intervention. In addition, U.S. futures exchanges and some foreign exchanges have

regulations that limit the amount of fluctuation in futures contract prices that may occur during a single day. These limits are generally referred to as “daily price fluctuation limits,” and the maximum or minimum price of a contract on any given day as a result of these limits is referred to as a “limit price.” Once the limit price has been reached for a particular contract, no trades may be made at a different price. Limit prices have the effect of precluding trading in a particular contract or forcing the liquidation of contracts at disadvantageous times or prices. These circumstances could affect the value of any Commodity Futures Contract or Index, which may adversely affect the value of your notes.

**Changes in the margin requirements for any Commodity Futures Contract or commodity futures contracts underlying an Index may adversely affect the value of the notes.**

Futures exchanges require market participants to post collateral in order to open and keep open positions in futures contracts. If an exchange changes the amount of collateral required to be posted to hold positions in any Commodity Futures Contract or any commodity futures contract underlying any Index, market participants may adjust their positions, which may affect prices of the relevant commodity futures contracts. As a result, the value of any Commodity Futures Contract or Index may be affected, which may adversely affect the value of the notes.

**A Commodity Futures Contract or an Index may be subject to pronounced risks of pricing volatility.**

As a general matter, the risk of low liquidity or volatile pricing around the maturity date of a commodity futures contract is greater than in the case of other futures contracts because (among other factors) a number of market participants take physical delivery of the underlying commodities. Many commodities, like those in the energy and industrial metals sectors, have liquid futures contracts that expire every month. Therefore, these contracts are rolled forward every month. Contracts based on certain other commodities, most notably agricultural and livestock products, tend to have only a few contract months each year that trade with substantial liquidity. Thus, these commodities, with related futures contracts that expire infrequently, roll forward less frequently than every month and can have further pronounced pricing volatility during extended periods of low liquidity. The risk of irregular liquidity or pricing around the maturity date of a commodity futures contract is greater than in the case of other futures contracts because (among other factors) a number of market participants take delivery of the underlying commodities. In respect of a Commodity Futures Contract or an Index that represents energy, it should be noted that due to the significant level of continuous consumption, limited reserves and oil cartel controls, energy commodities are subject to rapid price increases in the event of perceived or actual shortages. These factors (when combined or in isolation) may affect the price of futures contracts and, as a consequence, the price of a Commodity Futures Contract or the level of an Index and any payment on the notes.

**For notes linked in whole or in part to a Commodity Futures Contract, the notes will be subject to risks associated with the commodity referenced by that Commodity Futures Contract.**

For notes linked in whole or in part to a Commodity Futures Contract, the notes will be subject to risks associated with the commodity referenced by that Commodity Futures Contract. See “— Risks Relating to Commodity Sectors and Individual Commodities” below.

**Risks Relating to an Index**

**The sponsor of an Index (an “Index Sponsor”) may adjust that Index in a way that affects its level, and the Index Sponsor has no obligation to consider your interests.**

The applicable Index Sponsor is responsible for maintaining an Index. The Index Sponsor can add, delete or substitute the commodity futures contracts underlying the applicable Index or make other methodological changes that could change the level of that Index. You should realize that the changing of commodity futures contracts included in an Index may affect that Index, as a newly added commodity futures contract may perform significantly better or worse than the commodity futures contract(s) it

replaces. Additionally, the Index Sponsor may alter, discontinue or suspend calculation or dissemination of the applicable Index. Any of these actions could adversely affect the value of the notes. The Index Sponsor of an Index has no obligation to consider your interests in calculating or revising that Index. See the relevant index description section in any accompanying underlying supplement or the relevant terms supplement for additional information.

**The reported level of an Index may include the deduction of index fees or other adjustments.**

Any accompanying underlying supplement or the relevant terms supplement may specify that the reported levels of an Index may include a deduction from the aggregate performance of the relevant commodity futures contracts underlying that Index of index fees or other adjustments. Under these circumstances, as a result of these deductions, the value of that Index will trail the value of a hypothetical identically constituted synthetic portfolio that is not subject to those index fees or other adjustments.

**Changes in future prices of commodity futures contracts included in an Index relative to their current prices may lead to a decrease in any payment on the notes.**

An Index is composed of futures contracts on physical commodities. As the contracts underlying an Index come to expiration, they are replaced by contracts that have a later expiration. For example, a contract purchased and held in August may specify an October expiration. As time passes, the contract expiring in October is replaced by a contract for delivery in November. This is accomplished by selling the October contract and purchasing the November contract. This process is referred to as “rolling.” Excluding other considerations, if the market for the underlying futures contracts is in “contango,” where the prices are higher in the distant delivery months than in the nearer delivery months, the purchase of the November contract would take place at a price that is higher than the price of the October contract, thereby creating a negative “roll yield.” In addition, excluding other considerations, if the market for the underlying futures contracts is in “backwardation,” where the prices are lower in the distant delivery months than in the nearer delivery months, the purchase of the November contract would take place at a price that is lower than the price of the October contract, thereby creating a positive “roll yield.”

For notes that provide long (or bullish) exposure to an Index, the presence of contango in the commodity markets could adversely affect the value of that Index and, accordingly, any payment on the notes. In addition, for notes that provide short (or bearish) exposure to an Index, the presence of backwardation in the commodity markets could adversely affect the value of that Index and, accordingly, any payment on the notes.

**The notes may be linked to an excess return index and not to a total return index.**

The notes may be linked to an excess return index and not to a total return index. The return from investing in futures contracts derives from three sources: (a) changes in the price of the relevant futures contracts (which is known as the “price return”); (b) any profit or loss realized when rolling the relevant futures contracts (which is known as the “roll return”); and (c) any interest earned on the cash deposited as collateral for the purchase of the relevant futures contracts (which is known as the “collateral return”).

Some commodity indices are excess return indices that measure the returns accrued from investing in uncollateralized futures contracts (*i.e.*, the sum of the price return and the roll return associated with an investment in futures contracts). By contrast, a total return index, in addition to reflecting those returns, also reflects interest that could be earned on funds committed to the trading of the underlying futures contracts (*i.e.*, the collateral return associated with an investment in futures contracts). If the notes provide long (or bullish) exposure to an Index that is an excess return index, then investing in the notes will not generate the same return as would be generated from investing directly in the relevant futures contracts or in a total return index related to the relevant futures contracts.



**For notes that provide short (or bearish) exposure to an Index that is a total return index, your return on the notes will be adversely affected by any interest earned on the cash deposited as collateral for the purchase of the relevant futures contracts.**

The notes may provide short (or bearish) exposure to an Index that is a total return index. The return from investing in futures contracts derives from three sources: (a) changes in the price of the relevant futures contracts (which is known as the “price return”); (b) any profit or loss realized when rolling the relevant futures contracts (which is known as the “roll return”); and (c) any interest earned on the cash deposited as collateral for the purchase of the relevant futures contracts (which is known as the “collateral return”).

Some commodity indices are excess return indices that measure the returns accrued from investing in uncollateralized futures contracts (*i.e.*, the sum of the price return and the roll return associated with an investment in futures contracts). By contrast, a total return index, in addition to reflecting those returns, also reflects interest that could be earned on funds committed to the trading of the underlying futures contracts (*i.e.*, the collateral return associated with an investment in futures contracts). If the notes are linked to an Index that is a total return index, any interest earned on the cash deposited as collateral for the purchase of the relevant futures contracts will have a positive effect on the level of that index, which will adversely affect the value of the notes.

**For notes linked in whole or in part to an Index, the notes will be subject to risks associated with the underlying commodity futures contracts and the commodities referenced by those commodity futures contracts.**

For notes linked in whole or in part to an Index, the notes will be subject to risks associated with the underlying commodity futures contracts and the commodities referenced by those commodity futures contracts. See “— Risks Relating to a Commodity Futures Contract” above and “— Risks Relating to Commodity Sectors and Individual Commodities” below.

### **Risks Relating to Commodity Sectors and Individual Commodities**

**The prices of commodities are volatile and are affected by numerous factors, certain of which are specific to the commodity sector for each commodity.**

A change in the price of any Commodity, Commodity Futures Contract or Index, the commodity underlying any Commodity Futures Contract or any of the commodity futures contracts underlying any Index may have a material adverse effect on the value of the notes and your return on an investment in the notes. Commodities and commodity futures contracts are subject to the effect of numerous factors, certain of which are specific to the commodity sector for each commodity or commodity futures contract to which your notes provide exposure, as discussed below. The relevant terms supplement or any accompanying underlying supplement may provide additional risk factors relating to any relevant Underlying.

#### *Agricultural Sector*

Global prices of agricultural commodities, including cocoa, coffee, corn, cotton, soybeans, sugar and wheat, are primarily affected by the global demand for and supply of those commodities but are also significantly influenced by speculative actions and by currency exchange rates. In addition, prices for agricultural commodities are affected by governmental programs and policies regarding agriculture, as well as general trade, fiscal and exchange control policies. Extrinsic factors, such as drought, floods, general weather conditions, disease and natural disasters may also affect agricultural commodity prices. Demand for agricultural commodities, such as wheat, corn and soybeans, both for human consumption and as cattle feed, has generally increased with worldwide growth and prosperity.

### *Energy Sector*

Global prices of energy commodities, including WTI crude oil, Brent crude oil, RBOB gasoline, heating oil, gas oil and natural gas, are primarily affected by the global demand for and supply of these commodities, but they are also significantly influenced by speculative actions and by currency exchange rates. In addition, prices for energy commodities are affected by governmental programs and policies, national and international political and economic events, changes in interest and exchange rates, trading activities in commodities and related contracts, trade, fiscal, monetary and exchange control policies, and with respect to oil, drought, floods, weather, government intervention, environmental policies, embargoes and tariffs. Demand for refined petroleum products by consumers, as well as by the agricultural, manufacturing and transportation industries, affects the price of energy commodities. Sudden disruptions in the supplies of energy commodities, such as those caused by war, natural events, accidents or acts of terrorism, may cause prices of energy commodity futures contracts to become extremely volatile and unpredictable. Also, sudden and dramatic changes in the futures market may occur, for example, upon a cessation of hostilities that may exist in countries producing energy commodities, the introduction of new or previously withheld supplies into the market or the introduction of substitute products or commodities. In particular, supplies of crude oil may increase or decrease depending on, among other factors, production decisions by the Organization of the Oil and Petroleum Exporting Countries (“OPEC”) and other crude oil producers. Crude oil prices are determined with significant influence by OPEC, which has the capacity to influence oil prices worldwide because its members possess a significant portion of the world’s oil supply. Crude oil prices are generally more volatile and more subject to dislocation than are prices of other commodities. Demand for energy commodities such as oil and gasoline is generally linked to economic activity and will tend to reflect general economic conditions.

### *Industrial Metals Sector*

Global prices of industrial metals commodities, including aluminum, copper, lead, nickel and zinc, are primarily affected by the global demand for and supply of these commodities, but they are also significantly influenced by speculative actions and by currency exchange rates. Demand for industrial metals is significantly influenced by the level of global industrial economic activity. Prices for industrial metals commodities are affected by governmental programs and policies, national and international political and economic events, changes in interest and exchange rates, trading activities in commodities and related contracts, trade, fiscal, monetary and exchange control policies, government intervention, embargoes and tariffs. An additional, but highly volatile, component of demand for industrial metals is adjustments to inventory in response to changes in economic activity and/or pricing levels, which will influence investment decisions in new mines and smelters. Sudden disruptions in the supplies of industrial metals, such as those caused by war, natural events, accidents, acts of terrorism, transportation problems, labor strikes and shortages of power, may cause prices of industrial metals futures contracts to become extremely volatile and unpredictable. The introduction of new or previously withheld supplies into the market or the introduction of substitute products or commodities will also affect the prices of industrial metals commodities.

### *Livestock Sector*

Livestock commodities, including live cattle, feeder cattle and lean hogs, are “non-storable” commodities, and therefore may experience greater price volatility than traditional commodities. Global livestock commodity prices are primarily affected by the global demand for and supply of those commodities, but are also significantly influenced by speculative actions and by currency exchange rates. In addition, prices for livestock commodities are affected by governmental programs and policies regarding livestock, as well as general trade, fiscal and exchange control policies. Extrinsic factors, such as drought, floods, general weather conditions, disease (e.g., Bovine Spongiform Encephalopathy, or Mad Cow Disease, and swine influenza), availability of and prices for livestock feed and natural disasters may also affect livestock commodity prices. Demand for livestock commodities has generally increased with worldwide growth and prosperity.

### *Precious Metals Sector*

Global prices of precious metals commodities, including gold, silver, platinum and palladium, are primarily affected by the global demand for and supply of those commodities, but they are also significantly influenced by speculative actions and by currency exchange rates. Demand for precious metals is significantly influenced by the level of global industrial economic activity. Prices for precious metals are affected by governmental programs and policies, national and international political and economic events, expectations with respect to the rate of inflation, changes in interest and exchange rates, trading activities in commodities and related contracts, trade, fiscal, monetary and exchange control policies, government intervention, embargoes and tariffs. Sudden disruptions in the supplies of precious metals, such as those caused by war, natural events, accidents, acts of terrorism, transportation problems, labor strikes and shortages of power, may cause prices of precious metals futures contracts to become extremely volatile and unpredictable. In addition, prices for precious metals can be affected by numerous other factors, including jewelry demand and production levels.

**The prices of commodities are volatile and are affected by numerous factors, certain of which are specific to the market for each commodity.**

A change in the price of any Commodity, Commodity Futures Contract or Index, the commodity underlying any Commodity Futures Contract or any of the commodity futures contracts underlying any Index may have a material adverse effect on the value of the notes and your return on your investment in the notes. Commodities and commodity futures contracts are subject to the effect of numerous factors, certain of which are specific to the market for each commodity or commodity futures contract to which your notes provide exposure, as discussed below. The relevant terms supplement or any accompanying underlying supplement may provide additional risk factors relating to any relevant Underlying.

### *Aluminum*

The price of aluminum is primarily affected by the global demand for and supply of aluminum, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Demand for aluminum is significantly influenced by the level of global industrial economic activity. Industrial sectors that are particularly important to demand for aluminum include the automobile, packaging and construction sectors. An additional, but highly volatile, component of demand is adjustments to inventory in response to changes in economic activity and/or pricing levels. There are substitutes for aluminum in various applications. Their availability and price will also affect demand for aluminum. The supply of aluminum is widely spread around the world, and the principal factor dictating the smelting of that aluminum is the ready availability of inexpensive power. The supply of aluminum is also affected by current and previous price levels, which will influence investment decisions in new smelters. Other factors influencing supply include transportation problems, labor strikes and shortages of power and raw materials. It is not possible to predict the aggregate effect of all or any combination of these factors.

### *Brent Crude*

The price of IPE Brent blend crude oil futures is primarily affected by the global demand for and supply of crude oil, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Crude oil prices are volatile and subject to dislocation. Demand for refined petroleum products by consumers, as well as the agricultural, manufacturing and transportation industries, affects the price of crude oil. Crude oil's end-use as a refined product is often as transport fuel, industrial fuel and in-home heating fuel. Potential for substitution in most areas exists, although considerations including relative cost often limit substitution levels. Because the precursors of demand for petroleum products are linked to economic activity, demand will tend to reflect economic conditions. Demand is also influenced by government regulations, such as environmental or consumption policies. In addition to general economic activity and demand, prices for crude oil are affected by political events, labor activity and, in particular, direct government intervention (such as embargos) or supply disruptions in major oil producing regions of the world. Such events tend to affect oil prices worldwide, regardless of

the location of the event. Supply for crude oil may increase or decrease depending on many factors. These include production decisions by the Organization of the Petroleum Exporting Countries ("OPEC") and other crude oil producers. Crude oil prices are determined with significant influence by OPEC. OPEC has the potential to influence oil prices worldwide because its members possess a significant portion of the world's oil supply. In the event of sudden disruptions in the supplies of oil, such as those caused by war, natural events, accidents or acts of terrorism, prices of oil futures contracts could become extremely volatile and unpredictable. Also, sudden and dramatic changes in the futures market may occur, for example, upon a cessation of hostilities that may exist in countries producing oil, the introduction of new or previously withheld supplies into the market or the introduction of substitute products or commodities. Crude oil prices may also be affected by short-term changes in supply and demand because of trading activities in the oil market and seasonality (e.g., weather conditions such as hurricanes). It is not possible to predict the aggregate effect of all or any combination of these factors.

#### *Cocoa*

The price of cocoa is primarily affected by the global demand for and supply of cocoa, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Cocoa is primarily used by the confectionary industry. The majority of cocoa is produced in West African nations such as Ghana and the Ivory Coast. This region historically has been subject to periods of significant political instability, which could lead to disruptions in production and price volatility. The majority of cocoa consumption is in the European Union member nations and the United States. Any significant changes in demand for cocoa by these nations could result in substantial volatility and a decline in the price of cocoa.

#### *Coffee*

The price of coffee is primarily affected by the global demand for and supply of coffee, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Demand for coffee is significantly influenced by human consumption, retail prices, social trends, lifestyle changes and market power, all of which are subject to fluctuation. The supply of coffee is dependent on many factors, including weather patterns such as floods, drought and freezing conditions, government regulation, planting decisions, the price of fuel, seeds and fertilizers and the current and previous price of coffee. Additionally, since most coffee is grown in South America, Latin America, Southeast Asia and Africa, coffee crops may be subject to supply disruption as a result of political instability, natural disasters, pestilence, wars or civil upheavals in such regions. Changes in supply and demand may have an adverse effect on the price of coffee. In addition, technological advances and scientific developments could lead to increases in worldwide production of coffee and corresponding decreases in the price of coffee.

#### *Copper*

The price of copper is primarily affected by the global demand for and supply of copper, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Demand for copper is significantly influenced by the level of global industrial economic activity. Industrial sectors that are particularly important to demand for copper include the electrical and construction sectors. In recent years, demand has been supported by strong consumption from newly industrializing countries due to their copper-intensive economic growth and industrial development. An additional, but highly volatile, component of demand is adjustments to inventory in response to changes in economic activity and/or pricing levels. There are substitutes for copper in various applications. Their availability and price will also affect demand for copper. Apart from Chile, the United States, Canada, Australia and Poland, the majority of copper concentrate supply (the raw material) comes from outside the Organization for Economic Cooperation and Development countries. The supply of copper is also affected by current and previous price levels, which will influence investment decisions in new smelters. In previous years, copper supply has been affected by strikes, financial problems and terrorist activity. It is not possible to predict the aggregate effect of all or any combination of these factors.

### *Corn*

The price of corn is primarily affected by the global demand for, and supply of, corn. The demand for corn is in part linked to the development of industrial and energy uses for corn. This includes the use of corn in the production of ethanol. The demand for corn is also affected by the production and profitability of the beef, pork and poultry sectors, which use corn for feed. Negative developments in those industries may lessen the demand for corn. For example, if avian flu were to have a negative effect on world poultry markets, the demand for corn might decrease. The supply of corn is dependent on many factors, including weather patterns, government regulation, the price of fuel and fertilizers and the current and previous price of corn. The United States, China and Brazil are large suppliers of corn. The supply of corn is particularly sensitive to weather patterns in these countries. In addition, technological advances could lead to increases in worldwide production of corn and corresponding decreases in the price of corn.

### *Cotton*

The price of cotton is primarily affected by the global demand for and supply of cotton, but is also significantly influenced by speculative actions and by currency exchange rates. In addition, the price of cotton is affected by governmental programs and policies regarding agriculture, including cotton, specifically, and trade, fiscal and monetary issues, more generally. Extrinsic factors also affect cotton prices such as weather, crop yields, natural disasters, technological developments, wars and political and civil upheavals. Demand for cotton has generally increased with worldwide growth and prosperity.

### *Gold*

The price of gold is primarily affected by the global demand for and supply of gold. The market for gold bullion is global, and gold prices are subject to volatile price movements over short periods of time and are affected by numerous factors, including macroeconomic factors, such as the structure of and confidence in the global monetary system, expectations regarding the future rate of inflation, the relative strength of, and confidence in, the U.S. dollar (the currency in which the price of gold is usually quoted), interest rates, gold borrowing and lending rates and global or regional economic, financial, political, regulatory, judicial or other events. Gold prices may be affected by industry factors, such as industrial and jewelry demand as well as lending, sales and purchases of gold by the official sector, including central banks and other governmental agencies and multilateral institutions that hold gold. Additionally, gold prices may be affected by levels of gold production, production costs and short-term changes in supply and demand due to trading activities in the gold market. From time to time, above-ground inventories of gold may also influence the market. It is not possible to predict the aggregate effect of all or any combination of these factors. The price of gold has recently been, and may continue to be, extremely volatile.

### *Heating Oil*

The level of global industrial activity influences the demand for heating oil. In addition, the seasonal temperatures in countries or regions that rely on heating oil, such as the northeastern United States and areas of the United Kingdom, can heavily influence the demand for heating oil. Heating oil is generally used to fuel heat furnaces for buildings. Heating oil is derived from crude oil and as such, any factors that influence the supply of crude oil may also influence the supply of heating oil.

### *Kansas Wheat*

The price of Kansas wheat is primarily affected by the global demand for and supply of wheat, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Demand for wheat is in part linked to the development of agricultural, industrial and energy uses for wheat including the use of wheat for the production of animal feed and bioethanol which may have a major impact on worldwide demand for wheat. In addition, prices for wheat are affected by governmental and intergovernmental programs and policies regarding trade, agriculture, and energy and fiscal and monetary issues, more generally. Human consumption and alternative uses for wheat and other grains in manufacturing and other industries may also affect the price of wheat. Wheat prices may also be

influenced by or dependent on subsidies, tariffs, retail prices, social trends, lifestyle changes and market power. Extrinsic factors also affect grain prices such as natural disasters, pestilence, wars and political and civil upheavals. Substitution of other commodities for wheat could also impact the price of wheat. The supply of wheat is particularly sensitive to weather patterns such as floods, drought and freezing conditions, planting decisions, the price of fuel, seeds and fertilizers and the current and previous price of wheat. In addition, technological advances and scientific developments could lead to increases in worldwide production of wheat and corresponding decreases in the price of wheat. The European Union, China, India and the United States are large suppliers of wheat crops.

### *Lead*

The price of lead is primarily affected by the global demand for and supply of lead, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Demand for lead is significantly influenced by the level of global industrial economic activity. The storage battery industrial sector is particularly important to demand for lead given that the use of lead in the manufacture of batteries accounts for a significant percentage of worldwide lead demand. Growth in the production of batteries will drive lead demand. The power generation industrial sector is also important to demand for lead given that the use of lead in the manufacture of power generation units accounts for a significant percentage of worldwide lead demand. Additional applications of lead include gasoline additives, pigments, chemicals and crystal glass. Use in the manufacture of these products will also influence demand for lead. An additional, but highly volatile, component of demand is adjustments to inventory in response to changes in economic activity and/or pricing levels. The supply of lead is widely spread around the world. The supply of lead is also affected by current and previous price levels, which will influence investment decisions in new mines and smelters. A critical factor influencing supply is the environmental and regulatory regimes of the countries in which lead is mined and processed. It is not possible to predict the aggregate effect of all or any combination of these factors.

### *Live Cattle*

Live cattle prices are primarily affected by the U.S. domestic demand for and supply of live cattle, but are also influenced by speculative actions and by currency exchange rates. Live cattle is a non-storable commodity, which means that the cattle can be kept in their "finished condition" (that is, ready for slaughter) for only a limited period of time. As live cattle reach market weights, they must be sold or suffer discounts. As a result, live cattle may experience greater price volatility than storable commodities. Live cattle are primarily sourced from within the United States, but some live cattle are transported from Mexico and Canada, and the United States is currently the largest consumer of the live cattle. In addition, prices for live cattle are affected by governmental programs and policies regarding livestock, as well as general trade, fiscal and exchange control policies. Extrinsic factors such as drought, floods, general weather conditions, disease (e.g., Bovine Spongiform Encephalopathy, or Mad Cow Disease), availability of and prices for livestock feed, availability of grazing land and natural disasters will also affect live cattle prices. Demand for livestock commodities such as live cattle has generally increased with worldwide growth and prosperity and global or U.S.-specific recessions will likely adversely affect demand for, and consequently the prices of, live cattle.

### *Natural Gas*

Natural gas is used primarily for residential and commercial heating and in the production of electricity. The level of global industrial activity influences the demand for natural gas. Natural gas has also become an increasingly popular source of energy in the United States, both for consumers and industry, in part because it burns more cleanly and has minimal impact on the environment. Many utilities, for example, have shifted away from coal or oil to natural gas to produce electricity. The demand for natural gas has also traditionally been cyclical, with higher demand during the months of winter and lower demand during the warmer summer months. In addition, the seasonal temperatures in countries throughout the world can also heavily influence the demand for natural gas. The United States and Russia are large producers of natural gas. In general, the supply of natural gas is based on competitive market forces: inadequate supply at any one time leads to price increases, which signal to production companies the need to

increase the supply of natural gas to the market. Supplying natural gas in order to meet this demand, however, is dependent on a number of factors. These factors may be broken down into two segments: those factors that affect the short-term supply and general barriers to increasing supply. In turn, factors that affect the short-term supply are as follows: the availability of skilled workers and equipment, permitting and well development and weather and delivery disruptions (e.g., hurricanes, labor strikes and wars). Similarly, the other more general barriers to the increase in supply of natural gas are: access to land, the expansion of pipelines and the financial environment. These factors, which are not exhaustive, are interrelated and can have complex and unpredictable effects on the supply for, and the price of, natural gas.

#### *Nickel*

The price of nickel is primarily affected by the global demand for and supply of nickel, but is also influenced from time to time by speculative actions and by currency exchange rates. Demand for nickel is significantly influenced by the level of global industrial economic activity. The stainless steel industrial sector is particularly important to demand for nickel given that the use of nickel in the manufacture of stainless steel accounts for a significant percentage of worldwide nickel demand. Growth in the production of stainless steel will therefore drive nickel demand. An additional, but highly volatile, component of demand is adjustments to inventory in response to changes in economic activity and/or pricing levels. There are substitutes for nickel in various applications. Their availability and price will also affect demand for nickel. The Philippines, Russia, Australia, Indonesia and Canada are large producers of nickel. Exports from the CIS have increased in recent years. The supply of nickel is also affected by current and previous price levels, which will influence investment decisions in new mines and smelters. It is not possible to predict the aggregate effect of all or any combination of these factors.

#### *Palladium*

The price of palladium has fluctuated widely over the past several years. Because the palladium supply is both limited and concentrated, any disruptions in the palladium supply tend to have an exaggerated effect on the price of palladium. Key factors that may influence prices are the policies and production and cost levels in the most important palladium-producing countries, in particular, Russia and South Africa (which together account for a large portion of production), the size and availability of the Russian palladium stockpiles, global supply and demand as well as the economic situation of the main consuming countries. The possibility of large-scale distress sales of palladium in times of crises may also have a short-term negative impact on the price of palladium and may adversely affect the value of the notes. For example, the 2008 financial crisis resulted in significantly depressed prices of palladium, largely due to forced sales and deleveraging from institutional investors such as hedge funds and pension funds. Crises in the future may impair palladium's price performance, which may, in turn, have an adverse effect on the value of the notes. Palladium is used in a variety of industries, in particular the automotive industry. Demand for palladium from the automotive industry, which uses palladium in the manufacture of catalytic converters, accounts for a large portion of the industrial use of palladium, and a renewed decline in the global automotive industry may impact the price of palladium and affect the value of the notes. Palladium is also used in the electronics, dental and jewelry industries.

#### *Platinum*

The price of platinum is primarily affected by global demand for and supply of platinum. However, since the platinum supply is very limited, any disruptions in platinum supply tend to have an exaggerated effect on the price of platinum. Key factors that may influence prices are the policies in or political stability of the most important producing countries, in particular, Russia and South Africa (which together account for a substantial majority of production), the size and availability of the Russian and South African platinum stockpiles and the economic situation of the main consuming countries. Platinum is used in a variety of industries, primarily the automotive industry. Demand for platinum from the automotive industry, which uses platinum in the manufacture of catalytic converters, accounts for a large portion of the industrial use of platinum. Platinum is also used in the chemical industry, the electronics industry and the dental industry. The primary nonindustrial use of platinum is jewelry.

### *RBOB Gasoline*

The level of global industrial activity influences the demand for non-oxygenated gasoline. In addition, the demand has seasonal variations, which occur during “driving seasons,” usually considered the summer months in North America and Europe. Non-oxygenated gasoline is derived from crude oil and as such, any factors that influence the supply of crude oil may also influence the supply of non-oxygenated gasoline.

### *Silver*

The price of silver is primarily affected by global demand for and supply of silver. Silver prices can fluctuate widely and may be affected by numerous factors. These include general economic trends, technical developments, substitution issues and regulation, as well as specific factors including industrial and jewelry demand, expectations with respect to the rate of inflation, the relative strength of the U.S. dollar (the currency in which the price of silver is generally quoted) and other currencies, interest rates, central bank sales, forward sales by producers, global or regional political or economic events and production costs and disruptions in major silver-producing countries, such as Mexico, China and Peru. The demand for and supply of silver affect silver prices, but not necessarily in the same manner as supply and demand affect the prices of other commodities. The supply of silver consists of a combination of new mine production and existing stocks of bullion and fabricated silver held by governments, public and private financial institutions, industrial organizations and private individuals. In addition, the price of silver has on occasion been subject to very rapid short-term changes due to speculative activities. From time to time, above-ground inventories of silver may also influence the market. The major end uses for silver include industrial applications, jewelry and silverware. It is not possible to predict the aggregate effect of all or any combination of these factors.

### *Soybean Meal*

The price of soybean meal is primarily affected by the global demand for and supply of soybean meal, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Soybean meal is used primarily as an animal feed ingredient and therefore demand for soybean meal is significantly influenced by the level of global livestock production. Soybean meal production is found primarily in China, the United States, Brazil, Argentina and India. Governmental programs and policies regarding agriculture, specifically, and trade, fiscal and monetary issues, more generally, in these countries could affect the supply and price of soybean meal. Extrinsic factors also affect soybean meal prices such as weather, crop yields, natural disasters, pestilence, technological developments, wars and political and civil upheavals.

### *Soybeans*

The price of soybeans is primarily affected by the global demand for and supply of soybeans, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Demand for soybeans is in part linked to the development of agricultural, industrial and energy uses for soybeans. This includes the use of soybeans for the production of animal feed, vegetable oil, edible soybean oil and biodiesel all of which may have a major impact on worldwide demand for soybeans. In addition, prices for soybeans are affected by governmental programs and policies regarding agriculture, including soybeans, specifically, and trade, fiscal and monetary issues, more generally. Extrinsic factors also affect soybean prices such as crop yields, natural disasters, pestilence, wars and political and civil upheavals. In addition, substitution of other commodities for soybeans could also impact the price of soybeans. The supply of soybeans is particularly sensitive to weather patterns such as floods, drought and freezing conditions, planting decisions, the price of fuel, seeds and fertilizers and the current and previous price of soybeans. In addition, technological advances and scientific developments could lead to increases in worldwide production of soybeans and corresponding decreases in the price of soybeans. The United States, Brazil and Argentina are large suppliers of soybean crops.



### *Sugar*

Global prices for sugar are primarily affected by the global demand for and supply of sugar, but are also significantly influenced by governmental policy and international trade agreements, by speculative actions and by currency exchange rates. Sugar is used primarily as a human food sweetener, but is also used in the production of fuel ethanol. Global demand for sugar is influenced by the level of human consumption of sweetened foodstuffs and beverages and to a lesser extent, by the level of demand for sugar as the basis for fuel ethanol. The world export supply of sugar is found primarily in Brazil, Thailand, Australia and Mexico while other countries, including India, China and the United States produce significant amounts of sugar for domestic consumption. Governmental programs and policies regarding agriculture and energy, specifically, and trade, fiscal and monetary issues, more generally, in these countries and at a multinational level could affect the supply and price of sugar. Extrinsic factors also affect sugar prices such as weather, disease and natural disasters.

### *Wheat*

The price of wheat is primarily affected by the global demand for and supply of wheat, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Demand for wheat is in part linked to the development of agricultural, industrial and energy uses for wheat including the use of wheat for the production of animal feed and bioethanol which may have a major impact on worldwide demand for wheat. In addition, prices for wheat are affected by governmental and intergovernmental programs and policies regarding trade, agriculture, and energy and fiscal and monetary issues, more generally. Human consumption and alternative uses for wheat and other grains in manufacturing and other industries may also affect the price of wheat. Wheat prices may also be influenced by or dependent on subsidies, tariffs, retail prices, social trends, lifestyle changes and market power. Extrinsic factors also affect grain prices such as natural disasters, pestilence, wars and political and civil upheavals. Substitution of other commodities for wheat could also impact the price of wheat. The supply of wheat is particularly sensitive to weather patterns such as floods, drought and freezing conditions, planting decisions, the price of fuel, seeds and fertilizers and the current and previous price of wheat. In addition, technological advances and scientific developments could lead to increases in worldwide production of wheat and corresponding decreases in the price of wheat. China, India and the United States are large producers of wheat crops.

### *WTI Crude Oil*

The price of WTI light sweet crude oil futures is primarily affected by the global demand for and supply of crude oil, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Crude oil prices are volatile and subject to dislocation. Demand for refined petroleum products by consumers, as well as the agricultural, manufacturing and transportation industries, affects the price of crude oil. Crude oil's end-use as a refined product is often as transport fuel, industrial fuel and in-home heating fuel. Potential for substitution in most areas exists, although considerations, including relative cost, often limit substitution levels. Because the precursors of demand for petroleum products are linked to economic activity, demand will tend to reflect economic conditions. Demand is also influenced by government regulations, such as environmental or consumption policies. In addition to general economic activity and demand, prices for crude oil are affected by political events, labor activity and, in particular, direct government intervention (such as embargos) or supply disruptions in major oil-producing regions of the world. Such events tend to affect oil prices worldwide, regardless of the location of the event. Supply for crude oil may increase or decrease depending on many factors. These include production decisions by OPEC and other crude oil producers. Crude oil prices are determined with significant influence by OPEC. OPEC has the potential to influence oil prices worldwide because its members possess a significant portion of the world's oil supply. In the event of sudden disruptions in the supplies of oil, such as those caused by war, natural events, accidents or acts of terrorism, prices of oil futures contracts could become extremely volatile and unpredictable. Also, sudden and dramatic changes in the futures market may occur, for example, upon a cessation of hostilities that may exist in countries producing oil, the introduction of new or previously withheld supplies into the market or the introduction of substitute products or commodities. Crude oil prices may also be affected by short-term

changes in supply and demand because of trading activities in the oil market and seasonality (e.g., weather conditions such as hurricanes). It is not possible to predict the aggregate effect of all or any combination of these factors.

### *Zinc*

The price of zinc is primarily affected by the global demand for and supply of zinc, but is also influenced significantly from time to time by speculative actions and by currency exchange rates. Demand for zinc is significantly influenced by the level of global industrial economic activity. The galvanized steel industrial sector is particularly important to demand for zinc given that the use of zinc in the manufacture of galvanized steel accounts for a significant percentage of worldwide zinc demand. The galvanized steel sector is in turn heavily dependent on the automobile and construction sectors. Growth in the production of galvanized steel will drive zinc demand. An additional, but highly volatile, component of demand is adjustments to inventory in response to changes in economic activity and/or pricing levels. China, Australia and Peru are large producers of zinc. The supply of zinc is also affected by current and previous price levels, which will influence investment decisions in new mines and smelters. It is not possible to predict the aggregate effect of all or any combination of these factors.

**Single commodity prices tend to be more volatile than, and may not correlate with, the prices of commodities generally.**

Any payment on the notes may be linked exclusively to the price of a single underlying commodity and not to a diverse basket of commodities or a broad-based commodity index. For such notes, the price of the underlying commodity may not correlate to, and may diverge significantly from, the prices of commodities generally. Because these notes are linked to the price of a single commodity, they carry greater risk and may be more volatile than a security linked to the prices of multiple commodities or a broad-based commodity index. The prices of many individual commodities may be, and have recently been, highly volatile, and there can be no assurance that the volatility will lessen.

**An investment in the notes may be subject to risks associated with the London Metal Exchange.**

The notes may be linked in whole or in part to a commodity (Aluminum, Copper, Lead, Nickel and Zinc) whose price is determined by the LME. The LME is a principals' market which operates in a manner more closely analogous to the over-the-counter physical commodity markets than regulated futures markets. For example, there are no daily price limits on the LME, which would otherwise restrict the extent of daily fluctuations in the prices of LME contracts. In a declining market, therefore, it is possible that prices would continue to decline without limitation within a trading day or over a period of trading days. In addition, a contract may be entered into on the LME calling for delivery on any day from one day to three months following the date of that contract and for monthly delivery up to 123, 63, 27, 15 and 12 months forward (depending on the commodity) following that third month, in contrast to trading on futures exchanges, which call for delivery in stated delivery months. As a result, there may be a greater risk of a concentration of positions in LME contracts on particular delivery dates, which in turn could cause temporary aberrations in the prices of LME contracts for certain delivery dates. If such aberrations occur during the term of the notes, the official U.S. dollar cash settlement prices per metric ton of the Commodity and, consequently, any payment on the notes, could be adversely affected.

**An investment in the notes may be subject to risks associated with an independent service provider appointed by the LBMA.**

The notes may be linked in whole or in part to a commodity (Gold, Silver, Platinum and Palladium) whose price is determined by an independent service provider appointed by the LBMA. The LBMA is a principals' market which operates in a manner more closely analogous to the over-the-counter physical commodity markets than regulated futures markets. If bullion trading should become subject to a value added tax or other tax or any other form of regulation currently not in place, the role of the LBMA gold, silver, platinum and palladium prices as a global benchmark for the values of Gold, Silver, Platinum and Palladium may be adversely affected. The LBMA gold, silver, platinum and palladium prices reflect

principals' markets that operate in a manner more closely analogous to an over-the-counter physical commodity market than regulated futures markets, and certain features of U.S. futures contracts are not present in the context of the LBMA gold, silver, platinum and palladium prices. For example, there are no daily price limits on the LBMA gold, silver, platinum and palladium prices that would otherwise restrict fluctuations in the LBMA gold, silver, platinum and palladium prices. In a declining market, it is possible that prices would continue to decline without limitation within a trading day or over a period of trading days.

**A separate underlying supplement or the relevant terms supplement may provide additional risk factors relating to any Underlying to which the notes are linked.**

## USE OF PROCEEDS AND HEDGING

Unless otherwise specified in the relevant terms supplement, the net proceeds JPMorgan Chase & Co. receives from the sale of the notes it issues will be used for general corporate purposes and, in part, by JPMorgan Chase & Co. or by one or more of its affiliates in connection with hedging its obligations under the notes. Unless otherwise specified in the relevant terms supplement, JPMorgan Financial intends to lend the net proceeds from the sale of the notes it issues to the Guarantor and/or its affiliates. The Guarantor expects that it and/or its affiliates will use the proceeds from these loans to provide additional funds for its and/or their operations and for other general corporate purposes. The notes will be offered to meet investor demand for products that reflect the risk-return profile and market exposure provided by the notes as set forth in the relevant terms supplement.

Unless otherwise specified in the relevant terms supplement, the original issue price of the notes will be equal to the estimated value of the notes plus the selling commissions and structuring fees, if any, paid to each agent and other affiliated or unaffiliated dealers (as shown on the cover page of the relevant terms supplement), plus (minus) the projected profits (losses) that the Issuer's affiliates expect to realize for assuming risks inherent in hedging its obligations under the notes, plus the estimated cost of hedging its obligations under the notes. See "Estimated Value and Secondary Market Prices of the Notes — The Estimated Value of the Notes" and the relevant terms supplement for additional information about the estimated value of the notes. See also "Use of Proceeds" in the prospectus.

On or prior to the date of the relevant terms supplement, the Issuer, through its affiliates or others, expects to hedge some or all of its anticipated exposure in connection with the notes. In addition, from time to time after the notes are issued, the Issuer, through its affiliates or others, may enter into additional hedging transactions and close out or unwind those the Issuer has entered into, in connection with the notes and possibly in connection with its or its affiliates' exposure to one or more Reference Currencies, Base Currencies, Commodities, Commodity Futures Contracts or Indices, the commodities underlying one or more Commodity Futures Contracts or the commodity futures contracts underlying one or more Indices or Funds or related currency exchange rates. These hedging activities may be undertaken on a portfolio basis with respect to some or all of the Issuer's and its affiliates' exposure to specific commodities and/or commodity futures contracts (including exposure unrelated to the notes). By hedging on a portfolio basis, the Issuer may hedge its entire obligations, a portion of its obligations or none of its obligations, and the amount of its hedge may change at any time. To accomplish this, the Issuer, through its affiliates or others, may take positions in one or more Reference Currencies, Base Currencies, Commodities or Commodity Futures Contracts or the commodities underlying the Commodity Futures Contracts or the commodity futures contracts underlying the Indices or related currency exchange rates, or instruments the value of which is derived from one or more Reference Currencies, Base Currencies, Commodities, Commodity Futures Contracts or Indices, the commodities underlying one or more Commodity Futures Contracts or the commodity futures contracts underlying one or more Indices or related currency exchange rates. From time to time, prior to maturity of the notes, the Issuer may pursue a dynamic hedging strategy that may involve taking long or short positions in the instruments described above.

While the Issuer cannot predict an outcome, any of these hedging activities or other trading activities of the Issuer could potentially affect the value of the Underlying(s) in a manner that adversely affects the value of the notes or any payment on the notes. Because hedging the Issuer's obligations entails risk and may be influenced by market forces beyond its control, this hedging may result in a profit that is more or less than expected, or it may result in a loss. It is possible that these hedging or trading activities could result in substantial returns for the Issuer or its affiliates while the value of the notes declines. See "Risk Factors — Risks Relating to Conflicts of Interest — The Issuer, the Guarantor (if applicable) or their affiliates may have economic interests that are adverse to those of the holders of the notes as a result of their hedging and other trading activities" above.

The Issuer has no obligation to engage in any manner of hedging activity and will do so solely at its discretion and for its own account. The Issuer may hedge its exposure on the notes directly or it may

aggregate this exposure with other positions taken by it and its affiliates with respect to its exposure to one or more Reference Currencies, Base Currencies, Commodities, Commodity Futures Contracts or Indices, the commodities underlying one or more Commodity Futures Contracts or the commodity futures contracts underlying one or more Indices or related currency exchange rates. No note holder will have any rights or interest in the Issuer's hedging activity or any positions that the Issuer or any unaffiliated counterparties may take in connection with the Issuer's hedging activity.

## GENERAL TERMS OF NOTES

### Calculation Agent

Unless otherwise specified in the relevant terms supplement, J.P. Morgan Securities LLC, one of the Issuer's and the Guarantor's (if applicable) affiliates, will act as the calculation agent. The Issuer and the Guarantor (if applicable) may appoint a different calculation agent from time to time after the date of the relevant terms supplement without your consent and without notifying you.

The calculation agent will make all necessary calculations and determinations in connection with the notes, including calculations and determinations relating to any payments on the notes and the assumptions used to determine the pricing and estimated value of the notes. All determinations made by the calculation agent will be at the sole discretion of the calculation agent and will, in the absence of manifest error, be conclusive for all purposes and binding on you and on the Issuer and the Guarantor (if applicable).

The calculation agent will provide written notice to the trustee at its New York office, on which notice the trustee may conclusively rely, of any amount payable on the notes at or prior to 11:00 a.m., New York City time, on the date on which payment is to be made.

Unless otherwise specified in the relevant terms supplement, all values with respect to calculations in connection with the notes will be rounded to the nearest one hundred-thousandth, with five one-millionths rounded upward (e.g., 0.876545 would be rounded to 0.87655). Notwithstanding the foregoing, all dollar amounts related to determination of any payment on the notes per note will be rounded to the nearest ten-thousandth, with five one hundred-thousandths rounded upward (e.g., 0.76545 would be rounded up to 0.7655), and all dollar amounts payable, if any, on the aggregate principal amount of notes per holder will be rounded to the nearest cent, with one-half cent rounded upward unless otherwise specified in the relevant terms supplement.

### Postponement of a Payment Date

If any scheduled Payment Date is not a business day, then that Payment Date will be the next succeeding business day following the scheduled Payment Date. If, due to a market disruption event or otherwise, any Determination Date referenced in the determination of a payment on the notes that will or may be payable on any Payment Date is postponed so that it falls less than two business days prior to that scheduled Payment Date, that Payment Date will be the second business day following the latest such Determination Date, as postponed, unless otherwise specified in the relevant terms supplement. If any Payment Date is adjusted as the result of a non-business day, a market disruption event or otherwise, any payment of interest due on that Payment Date will be made on that Payment Date as adjusted, with the same force and effect as if that Payment Date had not been adjusted, but no interest will accrue or be payable as a result of the delayed payment.

A "**business day**" is, unless otherwise specified in the relevant terms supplement, any day other than a day on which banking institutions in the City of New York are authorized or required by law, regulation or executive order to close or a day on which transactions in U.S. dollars are not conducted.

### Postponement of a Determination Date

For notes linked to an Index, the relevant terms supplement or an accompanying underlying supplement may provide a formulation of the postponement provisions that will apply to the notes instead of the relevant provisions set forth below.

#### ***Notes Linked to a Single Underlying***

*Notes Linked to a Single Reference Currency Relative to a Single Base Currency.* For notes linked to a single Reference Currency relative to a single Base Currency, if a Determination Date is a Disrupted

Day (as defined below), the applicable Determination Date will be postponed to the immediately succeeding business day that is not a Disrupted Day.

In no event, however, will any Determination Date be postponed to a date that is after the applicable Final Disrupted Determination Date (as defined below). If a Determination Date is or has been postponed to the applicable Final Disrupted Determination Date and that day is a Disrupted Day, the calculation agent will determine the Underlying Value (as defined below) for that Determination Date on that Final Disrupted Determination Date in good faith and in a commercially reasonable manner, taking into account the latest available quotation for the exchange rate of that Reference Currency relative to that Base Currency and any other information that it deems relevant.

*Notes Linked to a Single Commodity or Commodity Futures Contract.* For notes linked to a single Commodity or Commodity Futures Contract, if a Determination Date is a Disrupted Day (as defined below), the applicable Determination Date will be postponed to the immediately succeeding scheduled trading day (as defined below) that is not a Disrupted Day.

In no event, however, will any Determination Date be postponed to a date that is after the applicable Final Disrupted Determination Date. If a Determination Date is or has been postponed to the applicable Final Disrupted Determination Date and that day is a Disrupted Day, the calculation agent will determine the Underlying Value (as defined below) for that Determination Date on that Final Disrupted Determination Date using the calculation agent's good faith estimate of the official settlement price, offer price or fixing price, as applicable, on that Final Disrupted Determination Date that would have prevailed but for that Disrupted Day.

*Notes Linked to a Single Index.* For notes linked to a single Underlying that is an Index, if a Determination Date is a Disrupted Day, the applicable Determination Date will be postponed to the earlier of the immediately succeeding scheduled trading day that is not a Disrupted Day and the applicable Final Disrupted Determination Date, and the closing level of the Index on that postponed Determination Date will be deemed to be the Adjusted Closing Level (as defined below) of the Index with respect to the originally scheduled Determination Date.

For purposes of this “— Notes Linked to a Single Underlying” section, with respect to a Determination Date, unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, the “**Final Disrupted Determination Date**” means the fifth business day (in the case of notes linked to a Reference Currency relative to a Base Currency) or fifth scheduled trading day (in the case of notes linked to a Commodity, Commodity Futures Contract or Index) after that Determination Date, as originally scheduled, *provided* that, for notes with a maturity of one year or less, the relevant terms supplement may specify that the applicable Final Disrupted Determination Date will be the earlier of:

- (a) the fifth business day (in the case of notes linked to a Reference Currency relative to a Base Currency) or fifth scheduled trading day (in the case of notes linked to a Commodity, Commodity Futures Contract or Index) after that Determination Date, as originally scheduled; and
- (b) the last date that could serve as the final Determination Date without causing the maturity date to be more than one year (counting for this purpose either the issue date or the last possible date that the notes could be outstanding, but not both) after the issue date.

In this product supplement, “**Underlying Value**” of an Underlying refers to the Spot Rate, the Commodity Price, the Contract Price or the closing level, as applicable, of that Underlying.

#### ***Notes Linked to Multiple Underlyings***

For notes linked to multiple Underlyings, if a Determination Date is a Disrupted Day for any Underlying (any Underlying affected by a Disrupted Day, a “**Disrupted Underlying**”), the applicable

Determination Date will be postponed to the earliest day on which the Underlying Value of each Underlying has been established, as described below:

- (a) for each Underlying that is not a Disrupted Underlying (an “**Unaffected Underlying**”), the Underlying Value on the postponed Determination Date will be deemed to be the Underlying Value on the originally scheduled Determination Date;
- (b) for each Disrupted Underlying that is not an Index, the Underlying Value on the postponed Determination Date will be deemed to be the Underlying Value on the first business day (in the case of notes linked to a Reference Currency relative to a Base Currency) or scheduled trading day (as defined below) (in the case of notes linked to a Commodity or a Commodity Futures Contract), as applicable, immediately following the originally scheduled Determination Date that is not a Disrupted Day for that Disrupted Underlying; and
- (c) for each Disrupted Underlying that is an Index, the Underlying Value on the postponed Determination Date will be deemed to be the Adjusted Closing Level of that Index with respect to the originally scheduled Determination Date.

Accordingly, if a Determination Date is postponed as described above, the calculation agent may reference the Underlying Values of the Underlyings from different days when making any determinations with respect to that Determination Date, as postponed.

For example, assume that the notes are linked to three Underlyings that are Commodities or Commodity Futures Contracts, Underlying A, Underlying B and Underlying C, and that:

- (a) Scheduled Trading Day 1, a scheduled Determination Date, is not a Disrupted Day for Underlying A, but is a Disrupted Day for Underlyings B and C;
- (b) Scheduled Trading Day 2 is not a Disrupted Day for Underlying B, but is a Disrupted Day for Underlying C; and
- (c) Scheduled Trading Day 3 is not a Disrupted Day for Underlying C.

Under these circumstances, the Determination Date originally scheduled to occur on Scheduled Trading Day 1 would be postponed to Scheduled Trading Day 3 and, with respect to that Determination Date, as postponed, the Underlying Values would be deemed to be (a) for Underlying A, the Underlying Value on Scheduled Trading Day 1; (b) for Underlying B, the Underlying Value on Scheduled Trading Day 2; and (c) for Underlying C, the Underlying Value on Scheduled Trading Day 3.

In no event, however, will any Determination Date be postponed to a date that is after the applicable Final Disrupted Determination Date. If a Determination Date is or has been postponed to the applicable Final Disrupted Determination Date and on that day, the Underlying Value for any Disrupted Underlying has not been established in accordance with the first paragraph of this “— Notes Linked to Multiple Underlyings” section (a “**Final Disrupted Underlying**”), the Underlying Value for that Determination Date will be determined by the calculation agent on that Final Disrupted Determination Date and will be deemed to be:

- (a) for each Unaffected Underlying, the Underlying Value on the originally scheduled Determination Date;
- (b) for each Disrupted Underlying that is not a Final Disrupted Underlying, the Underlying Value determined in the manner described in the first paragraph of this “— Notes Linked to Multiple Underlyings” section;
- (c) for each Final Disrupted Underlying that is a Reference Currency relative to a Base Currency, an exchange rate determined in good faith and in a commercially reasonable manner, taking into



account the latest available quotation for the exchange rate of that Reference Currency relative to that Base Currency and any other information that it deems relevant;

- (d) for each Final Disrupted Underlying that is a Commodity or a Commodity Futures Contract, the calculation agent's good faith estimate of the official settlement price, offer price or fixing price, as applicable, of that Commodity or Commodity Futures Contract on that Final Disrupted Determination Date that would have prevailed but for that Disrupted Day; and
- (e) for each Final Disrupted Underlying that is an Index, the Adjusted Closing Level of that Index with respect to the originally scheduled Determination Date.

For purposes of this “— Notes Linked to Multiple Underlyings” section, with respect to a Determination Date, unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, the “**Final Disrupted Determination Date**” means the latest of the fifth business day (in the case of each Underlying that is a Reference Currency relative to a Base Currency) or fifth scheduled trading day (in the case of each Underlying that is a Commodity, Commodity Futures Contract or Index) after that Determination Date, as originally scheduled, for each of the Underlyings, *provided* that, for notes with a maturity of one year or less, the relevant terms supplement may specify that the applicable Final Disrupted Determination Date will be the earlier of:

- (a) the latest of the fifth business day (in the case of each Underlying that is a Reference Currency relative to a Base Currency) or fifth scheduled trading day (in the case of each Underlying that is a Commodity, Commodity Futures Contract or Index) after that Determination Date, as originally scheduled, for each of the Underlyings; and
- (b) the last date that could serve as the final Determination Date without causing the maturity date to be more than one year (counting for this purpose either the issue date or the last possible date that the notes could be outstanding, but not both) after the issue date.

#### ***Adjusted Closing Level of an Index***

The “**Adjusted Closing Level**” of an Index with respect to a Determination Date that is a Disrupted Day will be determined by the calculation agent and will be calculated in accordance with the formula for and method of calculating the closing level of that Index last in effect prior to the originally scheduled Determination Date, using:

- (a) with respect to each Unaffected Index Contract, the official settlement price of that Unaffected Index Contract as of the originally scheduled Determination Date (including any delayed publication of that official settlement price for the originally scheduled Determination Date that occurred on or prior to the determination of the postponed Determination Date); and
- (b) with respect to each Affected Index Contract, the official settlement price of that Affected Index Contract on the first scheduled trading day immediately following the originally scheduled Determination Date that is not a Disrupted Day with respect to any Relevant Index Contract with respect to that Affected Index Contract, *provided* that if each day from and including the originally scheduled Determination Date to and excluding the applicable Final Disrupted Determination Date is a Disrupted Day with respect to any such Relevant Index Contract, the price of each such Relevant Index Contract will be determined in good faith based on the calculation agent's assessment of the official settlement price of that Affected Index Contract on that Final Disrupted Determination Date.

With respect to a Determination Date that is a Disrupted Day, a futures contract included in an Index is an “**Unaffected Index Contract**” if no Relevant Index Contract with respect to that futures contract is affected by that Disrupted Day.

With respect to a Determination Date that is a Disrupted Day, a futures contract included in an Index is an **"Affected Index Contract"** if any Relevant Index Contract with respect to that futures contract is affected by that Disrupted Day.

With respect to a futures contract included in an Index, a **"Relevant Index Contract"** means any futures contract included in that Index that references the same commodity as that futures contract (including that futures contract), in accordance with the published methodology of that Index.

### ***Additional Defined Terms***

Unless otherwise specified in the relevant terms supplement, a **"Disrupted Day"** means:

- (a) with respect to a Reference Currency relative to a Base Currency, a day that is not a currency business day with respect to that Reference Currency relative to that Base Currency or a day on which a market disruption event occurs or is continuing with respect to that Reference Currency or that Base Currency;
- (b) with respect to a Commodity, Commodity Futures Contract or Index, a day that is not a trading day with respect to that Underlying or a day on which a market disruption event occurs or is continuing with respect to that Underlying; and
- (c) with respect to a Relevant Index Contract for a futures contract included in an Index, a day that is not a trading day with respect to that Index or a day on which a market disruption event that affects that Relevant Index Contract occurs or is continuing.

For additional information about market disruption events, see "The Underlyings" section below.

Unless otherwise specified in the relevant terms supplement, a **"currency business day"** with respect to a Reference Currency relative to a Base Currency, is a day, as determined by the calculation agent, on which (a) dealings in foreign currency in accordance with the practice of the foreign exchange market occur in the City of New York and the principal financial centers for that Reference Currency and that Base Currency, as specified in the relevant terms supplement, (b) banking institutions in the City of New York and those principal financial centers are not otherwise authorized or required by law, regulation or executive order to close and (c) if specified in the relevant terms supplement, the Trans-European Automated Real-time Gross Settlement Express Transfer System ("TARGET2") is open.

Unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, a **"scheduled trading day"** is:

- (a) with respect to Gold, Silver, Palladium or Platinum (each, a **"Precious Metal"**), a day, as determined by the calculation agent, on which the relevant market is scheduled to open for purposes of determining the price of the applicable Precious Metal;
- (b) with respect to a Commodity (other than a Precious Metal), a Commodity Futures Contract or any relevant successor commodity futures contract, a day, as determined by the calculation agent, on which the relevant market or relevant exchange, as applicable, is scheduled to open for trading for its regular trading session with respect to that Commodity, Commodity Futures Contract or successor commodity futures contract, as applicable; and
- (c) with respect to an Index or any relevant successor index, a day, as determined by the calculation agent, on which that Index or successor index, as applicable, is scheduled to be published by the sponsor or calculation agent of that Index or successor index, as applicable, in accordance with the index rules or methodology that governs that Index or successor index, as applicable.

Unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, a **"trading day"** is:

- (a) with respect to a Precious Metal, a day, as determined by the calculation agent, on which the relevant market is open for purposes of determining the price of the applicable Precious Metal;
- (b) with respect to a Commodity (other than a Precious Metal), a Commodity Futures Contract or any relevant successor commodity futures contract, a day, as determined by the calculation agent, on which trading is generally conducted on the relevant market or relevant exchange, as applicable, with respect to that Commodity, Commodity Futures Contract or successor commodity futures contract, as applicable; and
- (c) with respect to an Index or any relevant successor index, a day, as determined by the calculation agent, on which that Index or successor index, as applicable, is published by the sponsor or calculation agent of that Index or successor index, as applicable, in accordance with the index rules or methodology that governs that Index or successor index, as applicable.

Unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, “**relevant market**” means, with respect to a Commodity, the LME, the LBMA or the London Platinum and Palladium Market Association (the “**LPPM**”), as applicable, an independent service provider appointed by the LME, the LBMA or the LPPM, as applicable, to calculate and administer the Commodity Price of that Commodity or the primary exchange or market of trading related to that Commodity or any futures or options contracts relating to that Commodity.

Unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, “**relevant exchange**” means:

- (a) with respect to a Commodity Futures Contract and any relevant successor commodity futures contract, the ICE Futures Europe, the ICE Futures U.S., the New York Mercantile Exchange (the “**NYMEX**”), the Chicago Mercantile Exchange (the “**CME**”), the Chicago Board of Trade (the “**CBOT**”), the Kansas City Board of Trade (the “**KCBOT**”) or the primary exchange or market of trading related to that Commodity Futures Contract or successor commodity futures contract, as applicable, or any options contracts relating to that Commodity Futures Contract or successor commodity futures contract, as applicable; and
- (b) with respect to any Relevant Index Contract, the exchange or principal trading market on which that futures contract is traded.

All references to the LME, the LBMA or the LPPM with respect to the applicable Commodity will also be deemed to refer to any relevant successor exchange with respect to the applicable Commodity, and all references to the ICE Futures Europe, the ICE Futures U.S., the NYMEX, the CME, the CBOT or the KCBOT with respect to the applicable Commodity Futures Contract will also be deemed to refer to any relevant successor exchange with respect to the applicable Commodity Futures Contract.

### **Consequences of a Commodity Hedging Disruption Event**

Unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, for notes linked in whole or in part to a Commodity Futures Contract or an Index, if a commodity hedging disruption event occurs, the Issuer will have the right, but not the obligation, to adjust the timing and amount of any payment on the notes as described below.

A “**commodity hedging disruption event**,” unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, means that:

- (a) due to (i) the adoption of, or any change in, any applicable law, regulation, rule or order (including, without limitation, any tax law); or (ii) the promulgation of, or any change in, the interpretation, application, exercise or operation by any court, tribunal, regulatory authority, exchange or trading facility or any other relevant entity with competent jurisdiction of any applicable law, rule, regulation, order, decision or determination (including, without limitation, as

implemented by the CFTC or any exchange or trading facility), in each case occurring on or after the pricing date, the calculation agent determines in good faith that it is contrary (or upon adoption, it will be contrary) to that law, rule, regulation, order, decision or determination for the Issuer to purchase, sell, enter into, maintain, hold, acquire or dispose of its or its affiliates' (A) positions or contracts in securities, options, futures, derivatives or foreign exchange or (B) other instruments or arrangements, in each case, in order to hedge its obligations under the notes (in the aggregate on a portfolio basis or incrementally on a trade by trade basis) ("**hedge positions**"), including (without limitation) if those hedge positions (in whole or in part) are (or, but for the consequent disposal thereof, would otherwise be) in excess of any allowable position limit(s) in relation to any commodity traded on any exchange(s) or other trading facility (it being within the sole and absolute discretion of the calculation agent to determine which of the hedge positions are counted towards that limit); or

- (b) for any reason, the Issuer or its affiliates are unable, after using commercially reasonable efforts, to (i) acquire, establish, re-establish, substitute, maintain, unwind or dispose of any transaction(s) or asset(s) the calculation agent deems necessary to hedge the risk of entering into and performing the Issuer's commodity-related obligations with respect to the notes, or (ii) realize, recover or remit the proceeds of any of those transaction(s) or asset(s).

Please see "Risk Factors — Risks Relating to Underlyings Generally — Commodity Futures Contracts and the commodity futures contracts underlying an Index are subject to legal and regulatory regimes that may change in ways that could have a substantial adverse effect on the value of the notes and, for notes linked to an Index, could affect the timing and amount of any payment on the notes" for more information.

#### ***Adjustment of Payments on the Notes***

Unless otherwise specified in the relevant terms supplement, this "Adjustment of Payments on the Notes" subsection will apply to notes linked in whole or in part to a Commodity Futures Contract or an Index for which the payment at maturity, for each note, is equal to no less than the Principal Amount (or the Principal Amount reduced by a percentage specified in the relevant terms supplement (the "**Downside Exposure Percentage**")). The relevant terms supplement may specify that the notes will or may pay an additional amount at maturity based on the performance of the Underlying(s) (the "**Additional Amount**") and may specify that the Additional Amount will not be less than a specified amount (the "**Minimum Amount**"). The relevant terms supplement may also specify that the notes will or may pay interest based on the performance of the Underlying(s).

If this subsection applies and a commodity hedging disruption event occurs, the Issuer will have the right, but not the obligation, to cease making further interest payments (if applicable) and to adjust your payment at maturity based on determinations made by the calculation agent as described below. If a commodity hedging disruption event occurs and the Issuer chooses to exercise this right, (a) the Issuer will cease making further interest payments (if applicable) and the only remaining payment per note will be due and payable only at maturity and (b) for each note, the Issuer will pay you at maturity, instead of the amounts set forth in the relevant terms supplement, an amount equal to:

- (i) the Option Value; *plus*
- (ii) the Principal Amount, or, if the relevant terms supplement specifies a Downside Exposure Percentage, the Principal Amount  $\times$  (1 – Downside Exposure Percentage).

For purposes of this "Adjustment of Payments on the Notes" subsection, the "**Option Value**" will be determined by the calculation agent in good faith and in a commercially reasonable manner and will be a fixed amount representing the price of the embedded option representing the Additional Amount (if applicable) payable on the notes at maturity, as of the date on which the calculation agent determines that a commodity hedging disruption event has occurred (a "**commodity hedging disruption date**"), and the price of the embedded option representing each of the remaining interest payments (if applicable)

from but excluding the commodity hedging disruption date through and including the maturity date, as of the commodity hedging disruption date, *provided* that the Option Value may not be less than zero (or, if applicable, the Minimum Amount).

If a commodity hedging disruption event occurs and the Issuer decides to exercise this right, the Issuer will provide, or cause the calculation agent to provide, written notice of its election to exercise this right to the trustee at its New York office and to DTC, as holder of the notes. The Issuer, or the calculation agent, will deliver this notice as promptly as possible and in no event later than the fifth business day immediately following the commodity hedging disruption date. Additionally, the Issuer will specify in the notice the Option Value as determined on the commodity hedging disruption date.

### ***Acceleration of the Notes***

Unless otherwise specified in the relevant terms supplement, this “Acceleration of the Notes” subsection will apply to notes linked in whole or in part to a Commodity Futures Contract or an Index to which the “— Adjustment of Payments on the Notes” subsection above does not apply. If this subsection applies and a commodity hedging disruption event occurs, the Issuer will have the right, but not the obligation, to accelerate the payment on the notes. If a commodity hedging disruption event occurs and the Issuer chooses to exercise this right, (a) the Issuer will provide, or cause the calculation agent to provide, written notice of the Issuer’s election to exercise this right to the trustee, on which notice the trustee may conclusively rely, at its New York office, and to DTC, as holder of the notes, (b) the amount due and payable per note upon early acceleration will be determined by the calculation agent in good faith and in a commercially reasonable manner on the date on which the Issuer (or the calculation agent) delivers notice of acceleration and (c) that amount will be payable on the fifth business day following the date on which the Issuer (or the calculation agent) delivers notice of acceleration, and the maturity date will be accelerated to that fifth business day.

The Issuer will provide, or will cause the calculation agent to provide, written notice to the trustee at its New York office, on which notice the trustee may conclusively rely, and to DTC of the cash amount due with respect to the notes as promptly as possible and in no event later than two business days prior to the date on which payment is due.

### **Events of Default**

Under the heading “Description of Debt Securities — Events of Default and Waivers” in the prospectus is a description of events of default relating to debt securities including the notes.

### **Payment upon an Event of Default**

Unless otherwise specified in the relevant terms supplement, in case an event of default with respect to the notes shall have occurred and be continuing, if the notes do not include an automatic redemption feature, the amount declared due and payable per note upon any acceleration of the notes will be determined by the calculation agent and will be an amount in cash equal to the amount payable at maturity per note calculated in the manner described in the relevant terms supplement and calculated as if the date of acceleration were (a) the final Determination Date and (b) the Final Disrupted Determination Date for the final Determination Date (if the date of acceleration is a Disrupted Day).

Unless otherwise specified in the relevant terms supplement, in case an event of default with respect to the notes shall have occurred and be continuing, if the notes include an automatic redemption feature, the amount declared due and payable per note upon any acceleration of the notes will be determined by the calculation agent and will be (1) if (a) the date of acceleration is a Determination Date for the automatic redemption feature and the conditions for an automatic redemption would have been satisfied on the date of acceleration or (b) the date of acceleration is not a Determination Date for the automatic redemption feature, but the conditions for an automatic redemption would have been satisfied on the date of acceleration if the date of acceleration were the next succeeding Determination Date for the automatic redemption feature, an amount in cash equal to the amount payable upon an automatic redemption per

note calculated in the manner described in the relevant terms supplement and calculated as if the date of acceleration were (i) that Determination Date and (ii) the Final Disrupted Determination Date for that Determination Date, or (2) in all other circumstances, an amount in cash equal to the amount payable at maturity per note calculated in the manner described in the relevant terms supplement and calculated as if the date of acceleration were (a) the final Determination Date and (b) the Final Disrupted Determination Date for the final Determination Date (if the date of acceleration is a Disrupted Day).

Unless otherwise specified in the relevant terms supplement, any amount payable as described in the two immediately preceding paragraphs will include any accrued and unpaid interest on the notes; *provided* that any interest payable will be prorated based on the ratio of the actual number of days from and including the previous interest payment date to but excluding the date of acceleration over the number of days from and including the previous interest payment date to but excluding the next scheduled interest payment date.

If the final value of an Underlying is determined on more than one Determination Date, then, for each Determination Date scheduled to occur after the date of acceleration, the trading days immediately preceding the date of acceleration (in such number equal to the number of the Determination Dates in excess of one) will be the corresponding Determination Dates, unless otherwise specified in the relevant terms supplement.

The amount determined as described above will constitute the final payment on the notes, and no additional amounts will accrue with respect to the notes following the date of acceleration, regardless of any performance of the Underlying(s) following the date of acceleration.

If the maturity of the notes is accelerated because of an event of default as described above, the Issuer will, or will cause the calculation agent to, provide written notice to the trustee at its New York office, on which notice the trustee may conclusively rely, and to DTC, as holder of the notes, of the cash amount due with respect to the notes as promptly as possible and in no event later than two business days after the date of acceleration.

### **Modification**

Under the heading “Description of Debt Securities — Modification of the Indenture” in the prospectus is a description of when the consent of each affected holder of debt securities is required to modify the indenture.

### **Defeasance**

The provisions described in the prospectus under the heading “Description of Debt Securities — Discharge, Defeasance and Covenant Defeasance” are not applicable to the notes, unless otherwise specified in the relevant terms supplement.

### **Listing**

The notes will not be listed on any securities exchange, unless otherwise specified in the relevant terms supplement.

### **Book-Entry Only Issuance — The Depository Trust Company**

DTC will act as securities depository for the notes. The notes will be issued only as fully registered securities registered in the name of Cede & Co. (DTC’s nominee). One or more fully registered global note certificates, representing the total aggregate principal amount of the notes, will be issued and will be deposited with DTC. See the descriptions contained in the prospectus supplement under the heading “Description of Notes — Forms of Notes” and in the prospectus under the heading “Forms of Securities — Book-Entry System.”

## **Registrar, Transfer Agent and Paying Agent**

Payment of amounts due at maturity on the notes will be payable and the transfer of the notes will be registrable at the principal corporate trust office of The Bank of New York Mellon in the City of New York.

The Bank of New York Mellon or one of its affiliates will act as registrar and transfer agent for the notes. The Bank of New York Mellon will also act as paying agent for the notes and may designate additional paying agents.

Registration of transfers of the notes will be effected without charge by or on behalf of The Bank of New York Mellon but upon payment (with the giving of such indemnity as The Bank of New York Mellon may require) in respect of any tax or other governmental charges that may be imposed in relation to it.

## **Governing Law**

The notes will be governed by and interpreted in accordance with the laws of the State of New York.

## **Reopening Issuances**

The Issuer may, in its sole discretion, "reopen" the notes based upon market conditions and the value of the Underlying(s) at that time. The Issuer intends to issue the notes initially in an amount having the aggregate offering price specified on the cover of the relevant terms supplement. However, the Issuer may issue additional notes in amounts that exceed the amount on the cover at any time, without your consent and without notifying you. The notes do not limit the Issuer's ability to incur other indebtedness or to issue other securities. Also, the Issuer is not subject to financial or similar restrictions by the terms of the notes. These further issuances, if any, will be consolidated to form a single sub-series with the originally issued notes, will have the same CUSIP number and will trade interchangeably with the notes immediately upon settlement. Any notes bearing the same CUSIP number that are issued pursuant to any future additional issuances of notes bearing the same CUSIP number will increase the aggregate principal amount of the outstanding notes of this series. The price of any additional offering will be determined at the time of pricing of that offering.

***The Issuer has no obligation to take your interests into account when deciding whether to issue additional notes. In addition, the Issuer is under no obligation to reopen any series of notes or to issue any additional notes.***

## THE UNDERLYINGS

### Currencies

#### ***Spot Price of a Reference Currency***

Unless otherwise specified in the relevant terms supplement, for each Reference Currency, the “**Spot Rate**” on any relevant day will be:

- an exchange rate expressed as the amount of Base Currency per one unit of Reference Currency; or
- an exchange rate expressed as the amount of Reference Currency per one unit of Base Currency,

in each case as reported by Reuters Group PLC (“**Reuters**”) or Bloomberg, L.P. (“**Bloomberg**”) on the relevant page, as specified in the relevant terms supplement, or any substitute Reuters or Bloomberg page.

The relevant terms supplement will specify the specific Reuters or Bloomberg page to be used and the approximate time of day at which the relevant page will be consulted to determine the Spot Rate. If a market disruption event or non-currency business day with respect to a Reference Currency has occurred or is continuing, or a Succession Event with respect to a Reference Currency or Base Currency has occurred, the method of determining the relevant Spot Rates may be modified as described under “General Terms of Notes — Postponement of a Determination Date” above and “— Succession Events” below.

#### ***Market Disruption Events for a Reference Currency Relative to a Base Currency***

Unless otherwise specified in the relevant terms supplement, a “**market disruption event**,” with respect to a Reference Currency relative to a Base Currency, means the occurrence of any of the following with respect to that Reference Currency relative to that Base Currency:

- (a) a Convertibility Event;
- (b) a Deliverability Event (*provided* that a Deliverability Event will not constitute a market disruption event if that Reference Currency or Base Currency is a Non-Deliverable Currency);
- (c) a Liquidity Event;
- (d) a Taxation Event;
- (e) a Discontinuity Event;
- (f) a Price Source Disruption Event; or
- (g) (i) if the determination of the Spot Rate for that Reference Currency relative to that Base Currency involves the use of cross rates, the unavailability of a cross rate for that Reference Currency or Base Currency, each relative to the U.S. dollar, that prevents the calculation agent from calculating the Spot Rate for that Reference Currency relative to that Base Currency in the manner provided in the relevant terms supplement, or (ii) any event that generally makes it impossible to convert any currency used in the calculation of the Spot Rate for a Reference Currency into another currency (including, but not limited to, U.S. dollars),

in each case as determined by the calculation agent in its sole discretion and in the case of an event described in clause (a), (b), (c), (d), (e) or (g) above, a determination by the calculation agent in its sole



discretion that such event materially interferes with the Issuer's ability or the ability of any of its affiliates to adjust or unwind all or a material portion of any hedge with respect to the notes.

Unless otherwise specified in the relevant terms supplement, each of the following is a **"Non-Deliverable Currency"**: the Argentine peso, the Brazilian real, the Chilean peso, the Colombian peso, the Indian rupee, the Indonesian rupiah, the Korean won, the Malaysian ringgit, the New Taiwan dollar, the Peruvian nuevo sol and the Philippine peso.

Unless otherwise specified in the relevant terms supplement, a **"Convertibility Event"** with respect to a Reference Currency relative to a Base Currency means an event that, in effect, prevents, restricts or delays (or, in the case of a Non-Deliverable Currency, an event that results in a material change since the pricing date in) a market participant's ability to:

- convert that Reference Currency into that Base Currency or convert that Base Currency into that Reference Currency through customary legal channels; or
- convert that Reference Currency into that Base Currency at a rate at least as favorable as the rate for domestic institutions located in the Reference Currency Country or convert that Base Currency into that Reference Currency at a rate at least as favorable as the rate for domestic institutions located in the Base Currency Country.

Unless otherwise specified in the relevant terms supplement, a **"Deliverability Event"** with respect to a Reference Currency relative to a Base Currency means an event that has the effect of preventing, restricting or delaying a market participant from:

- delivering that Reference Currency from accounts inside the Reference Currency Country to accounts outside the Reference Currency Country or delivering that Base Currency from accounts inside the Base Currency Country to accounts outside the Base Currency Country; or
- delivering that Reference Currency between accounts inside the Reference Currency Country or to a party that is a non-resident of the Reference Currency Country or delivering that Base Currency between accounts inside the Base Currency Country or to a party that is a non-resident of the Base Currency Country.

Unless otherwise specified in the relevant terms supplement, a **"Liquidity Event"** with respect to a Reference Currency relative to a Base Currency means the imposition by any Relevant Country (or any political subdivision or regulatory authority thereof) of any capital or currency controls (such as a restriction placed on the holding of assets in or transactions through any account in the Relevant Country by a non-resident of that Relevant Country) (or, in the case of a Non-Deliverable Currency, an event that results in a material change since the pricing date in any capital or currency controls imposed by a Relevant Country), or the publication of any notice of an intention to do so, that the calculation agent determines in good faith and in a commercially reasonable manner is likely to materially affect an investment in that Reference Currency or Base Currency.

Unless otherwise specified in the relevant terms supplement, a **"Taxation Event"** with respect to a Reference Currency relative to a Base Currency means the implementation by a Relevant Country (or any political subdivision or regulatory authority thereof), or the publication of any notice of an intention to implement, any changes to the laws or regulations relating to foreign investment in that Relevant Country, as applicable (including, but not limited to, changes in tax laws and/or laws relating to capital markets and corporate ownership), that the calculation agent determines in good faith in a commercially reasonable manner are likely to materially affect an investment in that Reference Currency or Base Currency.

Unless otherwise specified in the relevant terms supplement, a **"Discontinuity Event"** with respect to a Reference Currency relative to a Base Currency means the pegging or de-pegging of that Reference Currency relative to that Base Currency (or of that Base Currency relative to that Reference Currency) or the controlled appreciation or devaluation by the Relevant Country (or any political subdivision or

regulatory authority thereof) of that Reference Currency relative to that Base Currency (or that Base Currency relative to that Reference Currency), as determined by the calculation agent in good faith and in a commercially reasonable manner.

Unless otherwise specified in the relevant terms supplement, a **"Price Source Disruption Event"** with respect to a Reference Currency relative to a Base Currency means:

- the non-publication or unavailability of the applicable spot rate for that Reference Currency relative to that Base Currency; or
- if cross rates are to be used in determining the Spot Rate of that Reference Currency relative to that Base Currency, the non-publication or unavailability of the applicable cross rate for that Reference Currency or Base Currency, each relative to the U.S. dollar,

in each case on the applicable Reuters or Bloomberg page (or any substitute page) specified in the relevant terms supplement and at the applicable time specified in the relevant terms supplement for the determination of the Spot Rate for that Reference Currency (or the cross rate for that Reference Currency and/or Base Currency) on any date of determination.

### ***Succession Events***

A **"Succession Event"** with respect to a Reference Currency or Base Currency means the occurrence of either of the following events:

- (a) that Reference Currency or Base Currency is lawfully eliminated and replaced with, converted into, redenominated as, or exchanged for, another currency; or
- (b) the Relevant Country for that Reference Currency or Base Currency divides into two or more countries or economic regions, as applicable, each with a different lawful currency immediately after that event.

That Reference Currency or Base Currency with respect to which a Succession Event has occurred is referred to in this product supplement as the **"Former Currency."**

On and after the effective date of a Succession Event, the Former Currency will be deemed to be replaced with:

- in the case of clause (a) above, the currency that lawfully replaces the Former Currency, into which the Former Currency is converted or redenominated, or for which the Former Currency is exchanged, as applicable, or
- in the case of clause (b) above, a currency selected by the calculation agent from among the lawful currencies resulting from the division that the calculation agent determines in good faith and in a commercially reasonable manner is most comparable to the Former Currency, taking into account the latest available quotation for the spot rate of the Former Currency relative to the relevant Base Currency or the relevant Reference Currency relative to the Former Currency, as applicable, and any other information that it deems relevant.

The replacement currency determined as described in the bullets above is referred to in this product supplement as the **"Successor Currency."**

Upon the occurrence of a Succession Event, the Initial Value for any Reference Currency affected by the Succession Event (either because the Succession Event has occurred with respect to that Reference Currency or because the Succession Event has occurred with respect to the relevant Base Currency) will be adjusted so that the new Initial Value will equal the product of:

- the original Initial Value; and

- a ratio of the Successor Currency to the Former Currency, which ratio will be calculated on the basis of the exchange rate set forth by the relevant country or economic region of the Former Currency for converting the Former Currency into the Successor Currency on the effective date of the Succession Event, as determined by the calculation agent.

In the event that the exchange rate is not publicly announced by the relevant country or economic region, the Initial Value will be adjusted by the calculation agent in good faith and in a commercially reasonable manner.

For example, assuming the notes are linked to the European Union euro relative to the U.S. dollar and the Initial Value is equal to 1.30 U.S. dollars per European Union euro, if a Succession Event occurs and the European Union euro is replaced with the Deutsche mark, the original Initial Value will be adjusted so that it is expressed in terms of Deutsche marks and U.S. dollars. If the exchange rate set forth by the European Union for converting European Union euros into Deutsche marks on the effective date of the Succession Event is 2.00 Deutsche marks for each European Union euro, the new Initial Value will be equal to 0.65 U.S. dollars per Deutsche mark (or 1.30 multiplied by the ratio of 1 over 2.00). On and after the effective date of a Succession Event, the Spot Rate will refer to the Deutsche mark relative to the U.S. dollar.

Notwithstanding the foregoing, if, as a result of a Succession Event, (a) in the case of a Former Currency that is a Reference Currency, the Successor Currency is the same as the relevant Base Currency or (b) in the case of a Former Currency that is a Base Currency, a Successor Currency is the same as the relevant Reference Currency, in lieu of the adjustments to the relevant Initial Value described above, the Spot Rate for the affected Reference Currency on each relevant day occurring on and after the effective date of that Succession Event will be based on the exchange rate on the date of the Succession Event as announced by the relevant country or economic region (or if that country or economic region has not announced an exchange rate, an exchange rate as determined by the calculation agent in good faith and in a commercially reasonable manner).

Upon the occurrence of a Succession Event, the calculation agent will select in good faith and in a commercially reasonable manner a substitute Reuters or Bloomberg page for purposes of determining the Spot Rate of any affected Reference Currencies. To the extent the market convention for quoting the exchange rate for the Successor Currency relative to the Base Currency or the Reference Currency relative to the Successor Currency, as applicable, is different from the market convention for the Reference Currency relative to the Base Currency, the calculation agent will apply all calculations in a manner consistent with the original market convention in accounting for any adjustments resulting from a Succession Event.

## **Commodities**

### ***Reference Price of a Commodity***

Unless otherwise specified in the relevant terms supplement, the “**Commodity Price**” of a Commodity on any relevant day will be:

- if the Commodity is “**Aluminum**,” the official cash offer price of high-grade Primary Aluminum on the LME for the spot market, stated in U.S. dollars per metric ton, as determined by the LME and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- if the Commodity is “**Copper**,” the official cash offer price of Copper Grade A on the LME for the spot market, stated in U.S. dollars per metric ton, as determined by the LME and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- if the Commodity is “**Gold**,” the official afternoon London gold price for delivery in London through a member of the LBMA authorized to effect such delivery, stated in U.S. dollars per troy ounce, as calculated and administered by independent service provider(s) pursuant to an agreement with

the LBMA and displayed on the applicable Bloomberg page that displays the price effective as of that day;

- (d) if the Commodity is “**Lead**,” the official cash offer price of Standard Lead on the LME for the spot market, stated in U.S. dollars per metric ton, as determined by the LME and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (e) if the Commodity is “**Nickel**,” the official cash offer price of Primary Nickel on the LME for the spot market, stated in U.S. dollars per metric ton, as determined by the LME and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (f) if the Commodity is “**Palladium**,” the official afternoon London palladium price for delivery in London through a member of the LPPM authorized to effect such delivery, stated in U.S. dollars per troy ounce gross, as calculated and administered by independent service provider(s) pursuant to an agreement with the LBMA and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (g) if the Commodity is “**Platinum**,” the official afternoon London platinum price for delivery in London through a member of the LPPM authorized to effect such delivery, stated in U.S. dollars per troy ounce gross, as calculated and administered by independent service provider(s) pursuant to an agreement with the LBMA and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (h) if the Commodity is “**Silver**,” the official London silver price for delivery in London through a member of the LBMA authorized to effect such delivery, stated in U.S. dollars per troy ounce, as calculated and administered by independent service provider(s) pursuant to an agreement with the LBMA and displayed on the applicable Bloomberg page that displays the price effective as of that day; and
- (i) if the Commodity is “**Zinc**,” the official cash offer price of Special High-Grade Zinc on the LME for the spot market, stated in U.S. dollars per metric ton, as determined by the LME and displayed on the applicable Bloomberg page that displays the price effective as of that day.

The Bloomberg page for each Commodity as of the date of this product supplement is set forth in the table below:

<u>Commodity</u>	<u>Bloomberg Page</u>
Aluminum	LOAHDY
Copper	LOCADY
Gold	GOLDLNPM
Lead	LOPBDY
Nickel	LONIDY
Palladium	PLDMLNPM
Platinum	PLTMLNPM
Silver	SLVRLN
Zinc	LOZSDY

The relevant terms supplement will specify how the Commodity Price of any Commodity not described in this product supplement will be determined.

#### ***Market Disruption Events for a Commodity***

With respect to a Commodity, a “**market disruption event**,” unless otherwise specified in the relevant terms supplement, means:

- a suspension, absence or material limitation of trading in (a) that Commodity on its relevant market, as determined by the calculation agent, or (b) futures or options contracts relating to that Commodity on the relevant market for those contracts, as determined by the calculation agent;
- any event that materially disrupts or impairs the ability of market participants to (a) effect transactions in, or obtain market values for, that Commodity on its relevant market or (b) effect transactions in, or obtain market values for, futures or options contracts relating to that Commodity on its relevant market;
- the failure to open or the closure prior to the scheduled weekday closing time (without regard to after hours or any other trading outside of the regular trading session hours) of the relevant market for that Commodity on a scheduled trading day; or
- the offer price or fixing price, as applicable, is not published by the relevant market and/or Bloomberg for that Commodity,

in each case as determined by the calculation agent in its sole discretion; and

- a determination by the calculation agent in its sole discretion that the applicable event described above materially interfered with the Issuer's ability or the ability of any of its affiliates to adjust or unwind all or a material portion of any hedge with respect to the notes.

***Discontinuation of Trading in, or Physical Delivery of, a Commodity on Its Relevant Market; Alternative Method of Calculation***

If the relevant market of a Commodity discontinues trading in, or physical delivery of, that Commodity and that Commodity is traded, or the physical delivery of that Commodity is effectuated, on another exchange (a "**successor relevant market**") or if the Commodity Price of a Commodity is no longer made available by the original price source and a price for that Commodity is available from another source (a "**successor commodity price**"), the calculation agent may, in its sole discretion, determine the Commodity Price of that Commodity on any Determination Date or any other relevant date on which the Commodity Price is to be determined by reference to the offer price or fixing price, as applicable, of that Commodity on that successor relevant market or by reference to that successor commodity price, as applicable, on that day.

Upon any selection by the calculation agent of a successor relevant market or a successor commodity price, the calculation agent will cause written notice thereof to be promptly furnished to the trustee, the Issuer, the Guarantor (if applicable) and DTC, as holder of the notes.

If the relevant market discontinues trading in, or the physical delivery of, a Commodity or if the Commodity Price of a Commodity is no longer made available by the original price source prior to, and that discontinuation is continuing on, any Determination Date or any other relevant date on which the Commodity Price is to be determined, and the calculation agent determines, in its sole discretion, that no successor relevant market or no successor commodity price, as applicable, is available at that time, or if the calculation agent has previously selected a successor relevant market and trading in, or the physical delivery of, that Commodity is discontinued on that successor relevant market prior to, and that discontinuation is continuing on, that Determination Date or that other relevant date, or if the calculation agent has previously selected a successor commodity price and that successor price is no longer made available by its price source prior to that Determination Date or that other relevant date, then the calculation agent will determine the Commodity Price for that Commodity for that date in good faith and in a commercially reasonable manner.

Notwithstanding these alternative arrangements, discontinuation of trading or physical delivery on the relevant market in the Commodity or the unavailability of the Commodity Price of a Commodity may adversely affect the value of the notes.

If at any time the method of calculating the Commodity Price of any Commodity is changed in a material respect by the relevant market or any successor relevant market for that Commodity, or if the reporting thereof is in any other way modified so that that Commodity Price does not, in the opinion of the calculation agent, fairly represent the value of that Commodity, the calculation agent will, at the close of business in New York City on each day on which the Commodity Price for that Commodity is to be determined, make such calculations and adjustments as, in the good faith judgment of the calculation agent, may be necessary in order to arrive at a value for that Commodity. The calculation agent will cause written notice of those calculations and adjustments to be furnished to the DTC, as holder of the notes.

## **Commodity Futures Contracts**

### ***Reference Price of a Commodity Futures Contract***

Unless otherwise specified in the relevant terms supplement, the “**Contract Price**” of a Commodity Futures Contract or any relevant successor commodity futures contract (as defined below) on any relevant day will be:

- (a) if the Commodity Futures Contract is “**Brent Crude**,” the official settlement price of Brent Crude on the ICE Futures Europe of the Relevant Contract, stated in U.S. dollars per barrel, as made public by the ICE Futures Europe and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (b) if the Commodity Futures Contract is “**Cocoa**,” the official settlement price of deliverable-grade cocoa beans on the ICE Futures U.S. of the Relevant Contract, stated in U.S. dollars per metric ton, as made public by the ICE Futures U.S. and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (c) if the Commodity Futures Contract is “**Coffee**,” the official settlement price of deliverable-grade washed arabica coffee on the ICE Futures U.S. of the Relevant Contract, stated in U.S. cents per pound, as made public by the ICE Futures U.S. and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (d) if the Commodity Futures Contract is “**Corn**,” the official settlement price of deliverable-grade corn on the CBOT of the Relevant Contract, stated in U.S. cents per bushel, as made public by the CBOT and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (e) if the Commodity Futures Contract is “**Cotton**,” the official settlement price of Cotton No. 2 on ICE Futures U.S. of the Relevant Contract, stated in U.S. cents per pound, as made public by ICE Futures U.S. and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (f) if the Commodity Futures Contract is “**Heating Oil**,” the official settlement price of New York Harbor No. 2 heating oil on the NYMEX of the Relevant Contract, stated in U.S. dollars per gallon, as made public by the NYMEX and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (g) if the Commodity Futures Contract is “**Kansas Wheat**,” the official settlement price of deliverable-grade Kansas wheat on the KCBOT of the Relevant Contract, stated in U.S. cents per bushel, as made public by the KCBOT and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (h) if the Commodity Futures Contract is “**Live Cattle**,” the official settlement price of deliverable-grade live steers on the CME of the Relevant Contract, stated in U.S. cents per pound, as made

public by the CME and displayed on the applicable Bloomberg page that displays the price effective as of that day;

- (i) if the Commodity Futures Contract is “**Natural Gas**,” the official settlement price of natural gas on the NYMEX of the Relevant Contract, stated in U.S. dollars per million British thermal units, as made public by the NYMEX and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (j) if the Commodity Futures Contract is “**RBOB Gasoline**,” the official settlement price of New York Harbor reformulated gasoline blendstock for oxygen blending on the NYMEX of the Relevant Contract, stated in U.S. dollars (or another monetary unit) per gallon, as made public by the NYMEX and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (k) if the Commodity Futures Contract is “**Soybean Meal**,” the official settlement price of deliverable-grade soybean meal on the CBOT of the Relevant Contract, stated in U.S. dollars per ton, as made public by the CBOT and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (l) if the Commodity Futures Contract is “**Soybeans**,” the official settlement price of deliverable-grade soybeans on the CBOT of the Relevant Contract, stated in U.S. cents per bushel, as made public by the CBOT and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (m) if the Commodity Futures Contract is “**Sugar**,” the official settlement price of deliverable-grade cane sugar on the ICE Futures U.S. of the Relevant Contract, stated in U.S. cents per pound, as made public by ICE Futures U.S. and displayed on the applicable Bloomberg page that displays the price effective as of that day;
- (n) if the Commodity Futures Contract is “**Wheat**,” the official settlement price of deliverable-grade wheat on the CBOT of the Relevant Contract, stated in U.S. cents per bushel, as made public by the CBOT and displayed on the applicable Bloomberg page that displays the price effective as of that day; and
- (o) if the Commodity Futures Contract is “**WTI Crude Oil**,” the official settlement price of West Texas Intermediate light sweet crude oil on the NYMEX of the Relevant Contract, stated in U.S. dollars per barrel, as made public by the NYMEX and displayed on the applicable Bloomberg page that displays the price effective as of that day.

The “**Relevant Contract**” means:

- with respect to Brent Crude, WTI Crude Oil, RBOB Gasoline, Natural Gas and Heating Oil, the first near futures contract, *provided* that if the Contract Price is being determined on the last trading day of the first near futures contract (all pursuant to the relevant exchange’s rules), then the second near futures contract; and
- with respect to Cocoa, Coffee, Corn, Cotton, Kansas Wheat, Live Cattle, Soybean Meal, Soybeans, Sugar and Wheat, the first near futures contract, *provided* that if the Contract Price is being determined on a day within the notice period for delivery of the applicable commodity under such futures contract or on the last trading day of the first near futures contract (all pursuant to the relevant exchange’s rules), then the second near futures contract.

The Bloomberg pages for each Commodity Futures Contract as of the date of this product supplement are set forth in the table below:

<b>Commodity Futures Contract</b>	<b>First Near Futures Contract Bloomberg Page</b>	<b>Second Near Futures Contract Bloomberg Page</b>
Brent Crude	CO1	CO2
Cocoa	CC1	CC2
Coffee	KC1	KC2
Corn	C 1	C 2
Cotton	CT1	CT2
Heating Oil	HO1	HO2
Kansas Wheat	KW1	KW2
Live Cattle	LC1	LC2
Natural Gas	NG1	NG2
RBOB Gasoline	XB1	XB2
Soybean Meal	SM1	SM2
Soybeans	S 1	S 2
Sugar	SB1	SB2
Wheat	W 1	W 2
WTI Crude Oil	CL1	CL2

The relevant terms supplement will specify how the Contract Price of any Commodity Futures Contract not described in this product supplement will be determined.

***Market Disruption Events for a Commodity Futures Contract***

With respect to a Commodity Futures Contract or any relevant successor commodity futures contract, a “**market disruption event**,” unless otherwise specified in the relevant terms supplement, means:

- any suspension of or limitation imposed on trading in that Commodity Futures Contract (or that successor commodity futures contract) on the relevant exchange or any other event that disrupts or impairs the ability of market participants in general to affect transactions in, or obtain market values for, that Commodity Futures Contract (or that successor commodity futures contract) on the relevant exchange, in each case which the calculation agent determines is material;
- all trading in that Commodity Futures Contract (or that successor commodity futures contract) is suspended for the entire day;
- all trading in that Commodity Futures Contract (or that successor commodity futures contract) is suspended (which term, for the avoidance of doubt, will not include, for purposes of this bullet point, that Commodity Futures Contract (or that successor commodity futures contract) being bid or offered at the limit price) subsequent to the opening of trading on that day, and trading does not recommence at least ten minutes prior to the actual closing time of the regular trading session of that Commodity Futures Contract (or that successor commodity futures contract) on that day; or
- if the relevant exchange establishes limits on the range within which the price of that Commodity Futures Contract (or that successor commodity futures contract) may fluctuate, the settlement price of that Commodity Futures Contract (or that successor commodity futures contract) is at the upper or lower limit of that range on that day,

in each case as determined by the calculation agent in its sole discretion; and

- a determination by the calculation agent in its sole discretion that the applicable event described above materially interfered with the Issuer’s ability or the ability of any of its affiliates to adjust or unwind all or a material portion of any hedge with respect to the notes.



***Discontinuation of Trading of a Commodity Futures Contract on Its Relevant Exchange;  
Alternative Method of Calculation***

If the relevant exchange of a Commodity Futures Contract discontinues trading in that Commodity Futures Contract and the price of another commodity futures contract that references the same commodity is quoted on the relevant exchange or any other exchange and is determined by the calculation agent, in its sole discretion, to be substantially similar to the discontinued Commodity Futures Contract (such replacement commodity futures contract will be referred to herein as a “**successor commodity futures contract**”), then the Contract Price for that discontinued Commodity Futures Contract on any Determination Date or any other relevant date on which the Contract Price is to be determined will be determined by reference to the official settlement price of that successor commodity futures contract at the close of trading on that relevant exchange for that successor commodity futures contract on that day.

Upon any selection by the calculation agent of a successor commodity futures contract, the calculation agent will cause written notice thereof to be promptly furnished to the trustee, the Issuer, the Guarantor (if applicable) and DTC, as holder of the notes.

If the relevant exchange discontinues trading in a Commodity Futures Contract prior to, and that discontinuation is continuing on, any Determination Date or any other relevant date on which the Contract Price is to be determined, and the calculation agent determines, in its sole discretion, that no successor commodity futures contract is available at that time, or if the calculation agent has previously selected a successor commodity futures contract and trading in that successor commodity futures contract is discontinued prior to, and that discontinuation is continuing on, that Determination Date or that other relevant date, then the calculation agent will determine the Contract Price for that Commodity Futures Contract or successor commodity futures contract, as applicable, for that date; *provided that*, if the calculation agent determines that no successor commodity futures contract exists for the discontinued Commodity Futures Contract, the Contract Price for that Commodity Futures Contract will be the settlement price that the calculation agent, in its sole discretion, determines to be fair and commercially reasonable under the circumstances at approximately 10:00 a.m., New York City time, on the date following the relevant Determination Date or that other relevant date.

Notwithstanding these alternative arrangements, discontinuation of trading on the relevant exchange in the Commodity Futures Contract may adversely affect the value of the notes.

If at any time the method of calculating the Contract Price of any Commodity Futures Contract or successor commodity futures contract, as applicable, is changed in a material respect by the relevant exchange or any other relevant exchange or market for the successor commodity futures contract, or if the reporting thereof is in any other way modified so that that Contract Price does not, in the opinion of the calculation agent, fairly represent the value of that Commodity Futures Contract or successor commodity futures contract, as applicable, the calculation agent will, at the close of business in New York City on each day on which the Contract Price for that Commodity Futures Contract or successor commodity futures contract, as applicable, is to be determined, make such calculations and adjustments as, in the good faith judgment of the calculation agent, may be necessary in order to arrive at a value for that Commodity Futures Contract or successor commodity futures contract, as applicable. The calculation agent shall cause written notice of such calculations and adjustments to be furnished to DTC, as holder of the notes.

**Indices**

If the notes are linked to any Index, a separate underlying supplement or the relevant terms supplement will provide additional information relating to that Index. Unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, all information regarding any Index, including, without limitation, its make-up, method of calculation and changes in its components, will be derived from publicly available information, without independent verification.

### ***Level of an Index***

Unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, the **“closing level”** of an Index or any relevant successor index (as defined under “— Discontinuation of an Index; Alteration of Method of Calculation” below) on any relevant day will equal the closing level of that Index or successor index, as applicable, as published on the applicable page (or any successor page) of Bloomberg Professional® service (**“Bloomberg”**) or any successor service, for that Index or successor index, as applicable. In certain circumstances, the closing level of an Index or any relevant successor index will be based on the alternative calculation of that Index described under “General Terms of Notes — Postponement of a Determination Date” above or “— Discontinuation of an Index; Alteration of Method of Calculation” below.

Unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, the **“intraday level”** of an Index or any relevant successor index at any time on any relevant day (including at the open and close of trading for that Index or successor index, as applicable) will equal the most recently reported level at that time for that Index or successor index, as applicable, as published on the applicable page (or any successor page) of Bloomberg or any successor service, for that Index or successor index, as applicable. In certain circumstances, the intraday level of an Index or any relevant successor index will be based on the alternative calculation of that Index described under “— Discontinuation of an Index; Alteration of Method of Calculation” below.

The closing level and intraday level of an Index as published by Bloomberg or any successor service may be published to greater or fewer decimal places than the official closing level or intraday level of that Index as published by its sponsor. Accordingly, the closing level and intraday level of an Index as published by Bloomberg may be slightly different from the official closing level or intraday level of that Index as published by its sponsor.

### ***Market Disruption Events for an Index***

With respect to an Index (or any relevant successor index), a **“market disruption event,”** unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, means:

- any suspension of or limitation imposed on trading in any Relevant Index Contract on the relevant exchange or any other event that disrupts or impairs the ability of market participants in general to affect transactions in, or obtain market values for, any Relevant Index Contract on the relevant exchange, in each case which the calculation agent determines is material;
- all trading in any Relevant Index Contract is suspended for the entire day;
- all trading in any Relevant Index Contract is suspended (which term, for the avoidance of doubt, will not include, for purposes of this bullet point, a Relevant Index Contract being bid or offered at the limit price) subsequent to the opening of trading on that day, and trading does not recommence at least ten minutes prior to the actual closing time of the regular trading session of that Relevant Index Contract on that day; or
- if the relevant exchange establishes limits on the range within which the price of any Relevant Index Contract may fluctuate, the official settlement price of any Relevant Index Contract is at the upper or lower limit of that range on that day,

in each case as determined by the calculation agent in its sole discretion; and

- a determination by the calculation agent in its sole discretion that the applicable event described above materially interfered with the Issuer’s ability or the ability of any of its affiliates to adjust or unwind all or a material portion of any hedge with respect to the notes.

### ***Discontinuation of an Index; Alteration of Method of Calculation***

Unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, if the sponsor of an Index (an “**Index Sponsor**”) discontinues publication of that Index and that Index Sponsor or another entity publishes a successor or substitute index that the calculation agent determines, in its sole discretion, to be comparable to the discontinued Index (such index being referred to in this product supplement as a “**successor index**”), then from and including an effective date determined by the calculation agent in good faith (with respect to that Index, the “**Successor Date**”):

- the closing level of that Index on any Determination Date, or any other relevant date on which the closing level of that Index is to be determined, will be determined by reference to the level of that successor index published with respect to that day and an adjustment factor determined by the calculation agent in good faith as of the applicable Successor Date, taking into account the closing level of that Index on the trading day immediately preceding the applicable Successor Date; and
- the intraday level, if applicable, of that Index at any time on any Determination Date, or any other relevant date on which the intraday level of that Index is to be determined, will be determined by reference to the level of that successor index as most recently reported by Bloomberg at that time and the adjustment factor.

Upon any selection by the calculation agent of a successor index, the calculation agent will cause written notice thereof to be promptly furnished to the trustee, the Issuer, the Guarantor (if applicable) and DTC, as holder of the notes.

Unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, if the Index Sponsor for an Index discontinues publication of that Index prior to, and that discontinuation is continuing on, a Determination Date or any other relevant date on which the closing level of that Index is to be determined, and the calculation agent determines, in its sole discretion, that no successor index for that Index is available at that time, or the calculation agent has previously selected a successor index for that Index and publication of that successor index is discontinued prior to, and that discontinuation is continuing on, that Determination Date or other relevant date, then (a) the calculation agent will determine the closing level of that Index for that Determination Date or that other relevant date on that date and (b) the intraday level of that Index, if applicable, at any time on any relevant day will be deemed to equal the closing level of that Index on that day, as determined by the calculation agent.

Unless otherwise specified in the relevant terms supplement or any accompanying underlying supplement, the closing level of that Index will be computed by the calculation agent in accordance with the formula for and method of calculating that Index or successor index, as applicable, last in effect prior to that discontinuation using the official settlement price(s) (or, if trading in the relevant futures contract(s) has been materially suspended or materially limited, the calculation agent's good faith estimate of the applicable settlement price(s) that would have prevailed but for that suspension or limitation) at the close of the principal trading session on that date of each futures contract most recently composing that Index or successor index, as applicable, as well as any futures contract required to roll any expiring futures contract in accordance with the method of calculating that Index or successor index, as applicable.

Notwithstanding these alternative arrangements, discontinuation of the publication of an Index or its successor index, as applicable, may adversely affect the value of the notes.

If at any time the method of calculating an Index or a successor index, or the level thereof, is changed in a material respect, or if an Index or a successor index is in any other way modified so that it does not, in the opinion of the calculation agent, fairly represent the level of that Index or successor index, as applicable, had those changes or modifications not been made, then the calculation agent will, at the close of business in the City of New York on each date on which the closing level or intraday level, if applicable, of that Index or successor index, as applicable, is to be determined, make such calculations and adjustments as, in the good faith judgment of the calculation agent, may be necessary in order to arrive at a level of an index comparable to that Index or successor index, as the case may be, as if those

changes or modifications had not been made, and the calculation agent will calculate the closing level or intraday level, as applicable, of that Index or successor index, as applicable, with reference to that Index or successor index, as adjusted. Accordingly, if the method of calculating an Index or a successor index is modified so that the level of that Index or successor index is a fraction of what it would have been if there had been no such modification, then the calculation agent will adjust its calculation of that Index or successor index, as applicable, in order to arrive at a level of that Index or successor index, as applicable, as if there had been no modification.

## COMMODITY MARKETS AND EXCHANGES

All information regarding the markets and exchanges described below is derived from publicly available information, without independent verification. This information reflects the policies of, and is subject to change by, the relevant exchange or market.

### **The London Metal Exchange**

The LME was established in 1877. The majority of all non-ferrous metal futures business is transacted on the LME. The LME was acquired by Hong Kong Exchanges & Clearing Limited in 2012.

LME contracts are designed to mirror physical trading, enabling users to hedge their physical transactions down to the day (referred to as a **"prompt date"**). Currently, LME futures contracts trade daily out to 3 months forward, weekly from 3 months up to 6 months and monthly from 6 months up to 123 months in the future, depending on the underlying metal. Trading is conducted on the basis of warrants that cover physical material held in listed warehouses.

The LME is not a cash-cleared market. Both interoffice and floor trading are cleared and guaranteed by a system run by the London Clearing House, whose role is to act as a central counterparty to trades executed between clearing members and thereby reduce risk and settlements costs. The LME is subject to regulation by the UK Financial Conduct Authority. In international trading, rules applied by overseas regulatory bodies such as the US Commodity Futures Trading Commission (CFTC) also have to be taken into account.

A large volume of trading on the LME is transacted through inter-office dealing which allows the LME to operate as a 24-hour market. Trading on the floor takes place in two sessions daily, from 11:40 a.m. to 2:55 p.m. and from 2:55 to 5:00 p.m., London time. The two sessions are each broken down into two rings made up of five minutes' trading in each contract. After the second ring of the first session the official prices for the day are announced. Contracts may be settled by offset or delivery and can be cleared in U.S. dollars, pounds sterling, Japanese yen and euros. Prices are quoted in U.S. dollars. Trading is also available on LME's LMEselect electronic member to member trading platform, available from 1:00 a.m. to 7:00 p.m., London time, which offers a range of advanced features all tailored to the prompt date structure of LME contracts.

Copper and tin have traded on the LME since its establishment. The Copper Contract was upgraded to High Grade Copper in November 1981 and again to today's Grade-A Contract which began trading in June 1986. Tin's present contract began trading in June 1989, following a brief cessation in 1985 due to the collapse of the International Tin Council. Lead and zinc were officially introduced in 1920. Zinc has undergone a number of upgrades, most recently with the introduction of the special high-grade contract in June 1986. Primary Aluminum was introduced in December 1978 and today's High Grade Primary Aluminum Contract began trading in August 1987. Nickel joined the exchange the year after aluminum, in April 1979 and aluminum alloy in October 1992.

### **The London Bullion Market Association**

#### ***The London Gold Market***

The London gold market is the principal global clearing center for over-the-counter gold bullion transactions, including transactions in spot, forward and options contracts, together with exchange-traded futures and options and other derivatives. The principal representative body of the London gold bullion market is the LBMA. The LBMA, which was formally incorporated in 1987, is a self-regulatory association currently composed of 88 full members (including 13 market-making members) and 62 associates located in more than 30 countries.

As of March 23, 2015, the traditional London Gold Fix has been replaced by the LBMA Gold Price. ICE Benchmark Administration (“**IBA**”) provides the auction platform, methodology as well as overall independent administration of the electronic auction process of the LBMA Gold Price.

The auction takes place twice daily at 10:30 a.m. and 3:00 p.m. London time and is set by a series of auction rounds where participants that have been accredited by the LBMA to contribute to the LBMA Gold Price input their buy and sell volume orders. The auction has an independent chairperson, appointed by IBA to determine the price for each round and ensure that the price responds appropriately to market conditions. The chairperson sets the starting price and the price for each round in line with current market conditions and the activity in the auction. Participants then enter buy and/or sell orders by volume (*i.e.*, number of ounces). If the net volume of all participants falls within the pre-determined tolerance at the end of a round, the auction will be complete, with all volume tradable at that price.

### ***The London Silver Market***

The London silver market is the principal global clearing center for over-the-counter silver transactions, including transactions in spot, forward and options contracts, together with exchange-traded futures and options and other derivatives. The principal representative body of the London silver market is the LBMA.

As of August 15, 2014, the traditional London Silver Fix has been replaced by the LBMA Silver Price. IBA provides the auction platform, methodology as well as overall independent administration of the electronic auction process of the LBMA Silver Price.

The auction takes place daily at 12:00 noon London time and is set by a series of auction rounds where participants that have been accredited by the LBMA to contribute to the LBMA Silver Price input their buy and sell volume orders. The initial price is likely to be close to the spot price. In the first round, the system algorithm will attempt to match buy and sell orders within the permitted tolerance level. If the buy and sell orders are out of tolerance, the auction price will change and the auction will restart until the buy and sell volumes are in tolerance and the equilibrium price is set. The price is communicated to the market through various media.

### ***The London Platinum and Palladium Market***

The London platinum and palladium market is the principal global clearing center for over-the-counter platinum and palladium transactions, including transactions in spot and forward contracts. The principal representative body of the London platinum market and the London palladium market is the London Platinum and Palladium Market Association.

As of December 1, 2014, the traditional London Platinum Fix and London Palladium Fix have been replaced by the LBMA Platinum Price and the LBMA Palladium Price, respectively. The LME provides the auction platform, methodology as well as overall independent administration of the electronic auction process of the LBMA Platinum Price and the LBMA Palladium Price through its LMEbullion service.

The auctions takes place twice daily at 9:45 a.m. and 2:00 p.m. London time, with the palladium auction commencing as soon as the platinum auction concludes. LMEbullion delivers fully automated price-display auctions. House traders, client traders and direct clients of participants are shown a potential execution price and asked to indicate their interest. If the interest of all participants is within the permitted tolerance, the price will be confirmed and consequential trade allocations are distributed back to the participants. If the imbalance is outside the permitted range, a new price will be calculated and displayed to the participants in order to commence the next round. The auctions are controlled so that they only progress if there are sufficient participants present. All transactions in platinum and palladium are settled on a bilateral basis.

## **ICE Futures Europe and ICE Futures U.S.**

In May 2000, Intercontinental Exchange, Inc. ("**ICE**"), was established, with its founding shareholders representing some of the world's largest energy companies and global banks. ICE's mission was to transform over-the-counter energy markets by providing an open, accessible, around-the-clock electronic energy marketplace to a previously fragmented and opaque market. In June 2001, ICE expanded its business into futures trading by acquiring the International Petroleum Exchange, now ICE Futures Europe, which operated Europe's leading regulated energy futures exchange. Since 2003, ICE has partnered with the Chicago Climate Exchange to host its electronic marketplace. In April 2005, the entire ICE portfolio of energy futures became fully electronic. In November 2005, ICE completed its IPO on the New York Stock Exchange (NYSE) under the ticker ICE. In January 2007, ICE acquired the New York Board of Trade (the "NYBOT"), now ICE Futures U.S. Today, its futures contracts for soft commodities, including sugar and coffee, are listed on the ICE platform.

### ***ICE Futures Europe***

Established in 1981 as the International Petroleum Exchange of London ("**IPE**"), and acquired by ICE in 2001, ICE Futures Europe is a London-based Recognized Investment Exchange, offering benchmark energy and emissions futures and options contracts cleared by ICE Clear Europe. ICE Futures Europe is supervised by the U.K. Financial Conduct Authority, while U.S.-linked contracts, including WTI crude oil, are subject to further oversight by CFTC.

The IPE Brent blend crude oil futures contract was introduced in 1988 and is used to price a portion of the world's traded oil. The Brent Crude contract represents the right to receive a future delivery of 1,000 net barrels of Brent blend crude oil per unit and is quoted at a price that represents one barrel of Brent blend crude oil. The delivery point of crude oil underlying the contract is Sullom Voe, Scotland. The Brent Crude contract is a deliverable contract based on an Exchange of Futures for Physical ("EFP") delivery mechanism with an option to cash settle. This mechanism enables companies to take delivery of physical crude supplies through EFP or, alternatively and more commonly, open positions that can be cash settled at expiration against a physical price index. Trading in the contract will cease at the close of business on the business day immediately preceding the 15<sup>th</sup> day prior to the first day of the delivery month, if such 15<sup>th</sup> day is a banking day in London. If the 15<sup>th</sup> day is a non-banking day in London (including Saturday), trading will cease on the business day immediately preceding the first business day prior to the 15<sup>th</sup> day prior to the first day of the delivery month that is a banking day in London. Such dates are published by ICE Futures Europe.

### ***ICE Futures U.S.***

ICE Futures U.S. is based in New York and is a global soft commodity futures and options exchange, with markets for contracts on sugar, cotton, coffee, cocoa and financially settled contracts on U.S. grains and oilseeds. ICE Futures U.S. is also the exclusive venue for trading Russell 1000® and Russell 2000® index futures and options contracts as well as contracts based on the ICE U.S. Dollar Index. ICE Futures U.S. offers a range of trading and risk management services across soft commodities, equity indexes and foreign exchange (FX).

ICE Futures U.S. is a designated contract market pursuant to the Commodity Exchange Act, as amended, and, as such, is regulated by the CFTC.

Coffee has traded on ICE Futures U.S. (and its predecessors, the Coffee Exchange of New York, the Coffee, Sugar and Cocoa Exchange and the NYBOT) since 1882. Cotton has traded on ICE Futures U.S. (and its predecessors, the New York Cocoa Exchange and the NYBOT) since 1870. Sugar has traded on ICE Futures U.S. (and its predecessors, the Coffee, Sugar and Cocoa Exchange and the NYBOT) since 1914.

## **The New York Mercantile Exchange**

The NYMEX was established in 1872 as the Butter and Cheese Exchange of New York, and has since traded a variety of commodity products. It is currently an exchange for the trading of energy futures and options contracts, including contracts for crude oil, non-oxygenated gasoline, heating oil and natural gas, and for the trading of platinum group metals and other precious metals contracts. The NYMEX conducts trading in its futures contracts through an open-outcry trading floor during the trading day and after hours through an internet-based electronic platform. The establishment of energy futures on the NYMEX occurred in 1979, with the introduction of heating oil futures contracts. The NYMEX opened trading in leaded gasoline futures in 1981, followed by the crude oil futures contract in 1983 and unleaded gasoline futures in 1984. Since 2008, the NYMEX has been owned and operated by CME Group Inc. (“CME Group”).

## **CME**

The CME was established in 1898 as the Chicago Butter and Egg Board. The CME went public in December 2002 and, effective July 12, 2007, the CME purchased the CBOT and the two became subsidiaries of the overarching holding company CME Group. CME Group is an exchange that represents major benchmark asset classes that are ultimately available on a single trading platform and floor.

Trading is conducted by open outcry during regular trading hours on the floor of the CME in Chicago and on the CME Globex electronic trading platform. CME Globex was introduced in 1992 and allows for trading on the electronic trading platform around the clock. Over 80 percent of the CME Group’s total trading volume occurs electronically on CME Globex.

## **CBOT**

The CBOT, established in 1848, is a futures and futures-options exchange. CBOT members and stockholders trade 50 different futures and options products at the CBOT by open auction and electronically. For decades, the primary method of trading at the CBOT was open auction, which involved traders meeting face-to-face in trading pits to buy and sell futures contracts. But to better meet the needs of a growing global economy, the CBOT successfully launched its first electronic trading system in 1994. The CBOT exchange has upgraded its electronic trading system several times. The CBOT is owned and operated by CME Group.

## **KCBOT**

The KCBOT was established in 1856 as Kansas City’s chamber of commerce, and was formally chartered in 1876. The primary products traded at the KCBOT are futures contracts on hard red winter wheat and options derived on those futures contracts. In December 2012, CME Group acquired the KCBOT, since which time futures contracts and options were listed on the CME Globex platform, and moved its open outcry trading operations to the CME floor in 2013.

## **The Commodity Futures Markets**

Futures contracts on physical commodities are traded on regulated futures exchanges, in the over-the-counter market and on various types of physical and electronic trading facilities and markets. As of the date of this product supplement, all of the Commodity Futures Contracts and the contracts included in the indices described in this product supplement are exchange-traded futures contracts. An exchange-traded futures contract provides for the purchase and sale of a specified type and quantity of a commodity or financial instrument during a stated delivery month for a fixed price. A futures contract provides for a specified settlement month in which cash settlement is made or in which the commodity or financial instrument is to be delivered by the seller (whose position is therefore described as “short”) and acquired by the purchaser (whose position is therefore described as “long”).



No purchase price is paid or received on the purchase or sale of a futures contract. Instead, an amount of cash or cash equivalents must be deposited with the broker as "initial margin." This amount varies based on the requirements imposed by the exchange clearing houses, but it may be lower than 5% of the notional value of the contract. This margin deposit provides collateral for the obligations of the parties to the futures contract.

By depositing margin, which may vary in form depending on the exchange, with the clearing house or broker involved, a market participant may be able to earn interest on its margin funds, thereby increasing the total return that it may realize from an investment in futures contracts.

Futures contracts are traded on organized exchanges, known as "contract markets" in the United States. At any time prior to the expiration of a futures contract, a trader may elect to close out its position by taking an opposite position on the exchange on which the trader obtained the position, subject to the availability of a liquid secondary market. This operates to terminate the position and fix the trader's profit or loss. Futures contracts are cleared through the facilities of a centralized clearing house and a brokerage firm, referred to as a "futures commission merchant," which is a member of the clearing house.

Unlike equity securities, futures contracts, by their terms, have stated expirations at a specified point in time prior to expiration. At a specific point in time prior to expiration, trading in a futures contract for the current delivery month will cease. As a result, a market participant wishing to maintain its exposure to a futures contract on a particular commodity or financial instrument with the nearest expiration must close out its position in the expiring contract and establish a new position in the contract for the next delivery month, a process referred to as "rolling." For example, a market participant with a long position in a futures contract expiring in November who wishes to maintain a position in the nearest delivery month will, as the November contract nears expiration, sell the November contract, which serves to close out the existing long position, and buy a futures contract expiring in December. This will "roll" the November position into a December position, and, when the November contract expires, the market participant will still have a long position in the nearest delivery month.

Futures exchanges and clearing houses in the United States are subject to regulation by the Commodity Futures Trading Commission. Exchanges may adopt rules and take other actions that affect trading, including imposing speculative position limits, maximum price fluctuations and trading halts and suspensions and requiring liquidation of contracts in certain circumstances.

Futures markets outside the United States are generally subject to regulation by comparable regulatory authorities. The structure and nature of trading on non-U.S. exchanges may differ from this description.

## MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES

The following is a discussion of the material U.S. federal income and certain estate tax consequences of owning and disposing of notes. It applies to you only if you are an initial investor who purchases a note at its issue price for cash and holds it as a capital asset within the meaning of Section 1221 of the Internal Revenue Code of 1986, as amended (the "Code").

For U.S. federal income tax purposes, notes issued by JPMorgan Financial will be treated as if they were issued by JPMorgan Chase & Co. Accordingly, throughout this discussion, references to the Issuer are generally to JPMorgan Chase & Co., unless the context otherwise requires.

This discussion does not address all aspects of U.S. federal income and estate taxation that may be relevant to you in light of your particular circumstances, including alternative minimum tax consequences, the consequences to taxpayers subject to special tax accounting rules under Section 451(b) of the Code, the potential application of the provision of the Code known as the Medicare contribution tax and the different consequences that may apply if you are an investor subject to special treatment under the U.S. federal income tax laws, such as:

- a financial institution;
- a "regulated investment company" as defined in Code Section 851;
- a tax-exempt entity, including an "individual retirement account" or "Roth IRA" as defined in Code Section 408 or 408A, respectively;
- a dealer in securities;
- a person holding a note as part of a "straddle," conversion transaction or integrated transaction, or who has entered into a "constructive sale" with respect to a note;
- a U.S. Holder (as defined below) whose functional currency is not the U.S. dollar;
- a trader in securities who elects to apply a mark-to-market method of tax accounting; or
- a partnership or other entity classified as a partnership for U.S. federal income tax purposes.

If you are a partnership for U.S. federal income tax purposes, the U.S. federal income tax treatment of a partner will generally depend on the status of the partner and your activities.

This discussion is based on the Code, administrative pronouncements, judicial decisions and final, temporary and proposed Treasury regulations as of the date of this product supplement, changes to any of which, subsequent to the date hereof, may affect the tax consequences described herein, possibly with retroactive effect. As the law applicable to the U.S. federal income taxation of instruments such as the notes is technical and complex, the discussion below necessarily represents only a general discussion. Moreover, the effects of any applicable state, local or non-U.S. tax laws are not discussed. **You should consult your tax adviser concerning the application of U.S. federal income and estate tax laws to your particular situation (including the possibility of alternative treatments of the notes), as well as any tax consequences arising under the laws of any state, local or non-U.S. jurisdiction.**

### Tax Treatment of the Notes

The tax treatment of an offering of notes for U.S. federal income tax purposes will depend upon the facts at the time of the offering. At the time of an offering, the Issuer may seek an opinion of counsel regarding the tax consequences of owning and disposing of the offered notes. In this event, whether or not counsel is able to opine regarding the correctness of the treatment the Issuer intends to apply to a particular offering of notes, the Issuer generally expects that counsel will be able to opine that the tax consequences described in the applicable sections below are the material tax consequences of owning

and disposing of the notes if that treatment is respected, as well as material tax consequences that may apply if it is not respected.

The following discussion assumes the treatment described in an applicable section below is respected, except where otherwise indicated. The relevant terms supplement may indicate consequences different from those described herein and also may identify other issues applicable to a particular offering of notes.

### **Tax Consequences to U.S. Holders**

You are a “U.S. Holder” if for U.S. federal income tax purposes you are a beneficial owner of a note that is:

- a citizen or individual resident of the United States;
- a corporation, created or organized in or under the laws of the United States, any state therein or the District of Columbia; or
- an estate or trust the income of which is subject to U.S. federal income taxation regardless of its source.

### ***Notes Treated as Debt Instruments That Have a Term of Not More than One Year***

The following discussion applies to notes with a term of not more than one year (including either the issue date or the last possible date that the notes could be outstanding, but not both) that are properly treated as indebtedness for U.S. federal income tax purposes. This discussion does not apply to notes with a term of not more than one year that provide for payments prior to maturity. If applicable, the relevant terms supplement will describe the tax consequences of an investment in notes with a term of not more than one year that provide for payments prior to maturity.

No statutory, judicial or administrative authority directly addresses the treatment of these notes or similar instruments for U.S. federal income tax purposes, and the Issuer does not intend to request a ruling from the IRS with respect to these notes. Because the term of these notes is not more than one year, the Issuer expects to treat the notes as “short-term obligations.” Generally, a short-term obligation is treated for U.S. federal income tax purposes as issued at a discount equal to the difference between the payments due thereon and the instrument’s issue price, and this discount is treated as interest income when received or accrued, as described further below. There is no authority, however, regarding the accrual of discount on short-term obligations, such as the notes, that provide for contingent payments, and no ruling will be requested from the IRS with respect to the notes. As a result, several aspects of the U.S. federal income tax consequences of an investment in these notes are uncertain, as discussed below.

*Tax Treatment Prior to Maturity.* If you are a cash-method taxpayer, you will not be required to recognize income with respect to the notes prior to maturity, other than pursuant to a sale or exchange, as described below. You may, however, elect to accrue discount into income on a current basis, in which case you would be subject to the rules described in the following paragraph. Generally, if you own a short-term obligation and do not make this election, you will be required to defer deductions with respect to any interest paid on indebtedness incurred to purchase or carry the short-term obligation, to the extent of accrued discount that you have not yet included in income. As noted above, however, there is no authority regarding the accrual of discount on short-term obligations such as the notes. It is therefore unclear how, if at all, the rules regarding deferral of interest deductions would apply to your notes.

Generally, accrual-method owners and certain other owners of a short-term obligation (including electing cash-method owners) are required to accrue discount on the obligation into income on a straight-line basis. As noted above, however, there is no authority regarding the accrual of discount on short-term obligations such as the notes. Consequently, the timing and amounts of the discount to be accrued on

these notes is generally unclear. If the overall amount of discount that will be received has become fixed (or the likelihood of this amount not being a fixed amount has become remote) prior to maturity, it is more likely than not that the amount of discount to be accrued will be determined based on the fixed amount.

***Tax Treatment upon Sale, Exchange or Redemption.*** Upon a sale or exchange of a note (including early redemption or repurchase, acceleration or redemption at maturity), you will recognize gain or loss in an amount equal to the difference between the amount you receive and your adjusted basis in the note. Your adjusted basis in the note will equal the amount you paid to acquire the note, increased by any discount that you have previously included in income but not received. The amount of any resulting loss generally will be treated as a capital loss. Alternatively, for notes linked to one or more Reference Currencies, it is possible that some or all of any such loss could be treated as ordinary foreign currency loss under Section 988 of the Code. A loss in excess of certain thresholds may be subject to special reporting requirements, although this is unclear. Gain recognized on redemption at maturity should be treated as ordinary interest income.

Generally, if you are a cash-method taxpayer who has not elected an accrual method of tax accounting in respect of your notes, gain recognized on a sale or exchange prior to maturity will be treated as ordinary income in an amount not exceeding the accrued discount. As noted above, however, there is no authority regarding the accrual of discount on short-term obligations such as the notes. If the overall amount of discount that will be received at maturity has become fixed (or the likelihood of this amount not being a fixed amount has become remote) prior to the sale or exchange, it is more likely than not that the portion of your gain on the sale or exchange that will be treated as accrued discount (and, therefore, taxed as ordinary income) will be determined based on the fixed amount. Subject to the possible application of Section 988 to notes linked to one or more Reference Currencies, the portion of your gain recognized in excess of accrued discount, if any, generally will be short-term capital gain. Alternatively, for notes linked to one or more Reference Currencies, some or all of any such gain may be treated as ordinary foreign currency gain under Section 988, although this is unclear.

Generally, if you own a short-term obligation and you are subject to an accrual method of tax accounting, subject to the possible application of Section 988 to notes linked to one or more Reference Currencies, gain recognized on a sale or exchange will be short-term capital gain because accrued discount will already have been included in your income. Alternatively, for notes linked to one or more Reference Currencies, some or all of your gain may be treated as ordinary foreign currency gain under Section 988, although this is unclear. As noted above, however, there is no authority regarding the accrual of discount on short-term obligations such as the notes. Consequently, there is uncertainty regarding what portion, if any, of gain recognized upon the sale or exchange prior to maturity of a note subject to an accrual method of tax accounting could be treated as short-term capital gain. Notwithstanding this uncertainty, if you are an accrual-method taxpayer, you will recognize ordinary income no later than, and in an amount not less than, if the notes were subject to cash-method accounting.

### ***Notes Treated as Debt Instruments That Have a Term of More than One Year***

The following discussion applies to notes with a term of more than one year (including either the issue date or the last possible date that the notes could be outstanding, but not both) that are properly treated as indebtedness for U.S. federal income tax purposes. The Issuer generally expects to treat these notes as “contingent payment debt instruments” for U.S. federal income tax purposes (“**CPDI Notes**”), with the consequences described below. The tax consequences of other notes, if any, that have a term of more than one year and that the Issuer expects to treat as debt instruments for U.S. federal income tax purposes will be discussed in the relevant terms supplement.

Notes properly treated as contingent payment debt instruments will generally be subject to the original issue discount (“**OID**”) provisions of the Code and the Treasury regulations issued thereunder, and you will be required to accrue as interest income the OID on the notes as described below.

The Issuer is required to determine a “comparable yield” for the CPDI Notes. The comparable yield is the yield at which the Issuer could issue a fixed-rate debt instrument with terms similar to those of the CPDI Notes, including the level of subordination, term, timing of payments and general market conditions, but excluding any adjustments for the riskiness of the contingencies or the liquidity of the CPDI Notes. Solely for purposes of determining the amount of interest income that you will be required to accrue, the Issuer is also required to construct a “projected payment schedule” in respect of the CPDI Notes representing a payment or a series of payments the amount and timing of which would produce a yield to maturity on the CPDI Notes equal to the comparable yield.

Unless otherwise provided in the relevant terms supplement, the Issuer will provide, and you may obtain, the comparable yield for a particular offering of CPDI Notes, and the related projected payment schedule, in the final terms supplement for these CPDI Notes, which the Issuer will file with the Securities and Exchange Commission.

**Neither the comparable yield nor the projected payment schedule constitutes a representation by the Issuer regarding the actual amount(s) of any contingent payment(s) that the Issuer will make on the CPDI Notes.**

For U.S. federal income tax purposes, you are required to use the Issuer’s determination of the comparable yield and projected payment schedule in determining interest accruals and adjustments in respect of your CPDI Notes, unless you timely disclose and justify the use of other estimates to the IRS. Regardless of your method of tax accounting, you will be required to accrue as interest income OID on your CPDI Notes in each taxable year at the comparable yield, adjusted upward or downward to reflect the difference, if any, between the actual and the projected amount(s) of the contingent payment(s), if any, on the CPDI Notes during the year (as described below).

In addition to interest accrued based upon the comparable yield as described above, you will be required to recognize interest income equal to the amount of any net positive adjustment, *i.e.*, the excess of actual payments over projected payments, in respect of a CPDI Note for a taxable year. A net negative adjustment, *i.e.*, the excess of projected payments over actual payments, in respect of a CPDI Note for a taxable year:

- will first reduce the amount of interest in respect of the CPDI Note that you would otherwise be required to include in income in the taxable year; and
- to the extent of any excess, will give rise to an ordinary loss, but only to the extent that the total amount of all previous interest inclusions under the CPDI Note exceeds the total amount of your net negative adjustments treated as ordinary loss on the CPDI Note in prior taxable years.

A net negative adjustment is not subject to the limitation imposed on miscellaneous itemized deductions under Section 67 of the Code, and therefore can be deducted against other income such as employment income and interest income. Any net negative adjustment in excess of the amounts described above will be carried forward to offset future interest income in respect of the CPDI Note or to reduce the amount realized on a sale or exchange of the CPDI Note (including early redemption or repurchase, acceleration or redemption at maturity).

Upon a sale or exchange of a CPDI Note, you generally will recognize taxable income or loss equal to the difference between the amount received from the sale or exchange (reduced by any net negative adjustment carryforward, as described in the preceding paragraph) and your adjusted tax basis in the CPDI Note. Your adjusted tax basis in the CPDI Note will equal the amount you paid to acquire the CPDI Note, increased by the amount of interest income you have previously accrued in respect of the CPDI Note (determined without regard to any of the positive or negative adjustments to interest accruals described above) and decreased by the amount of any projected payments in respect of the CPDI Note through the date of the sale or exchange. You generally must treat any income as interest income and any loss as ordinary loss to the extent of previous interest inclusions (reduced by the total amount of net

negative adjustments previously taken into account as ordinary losses), and the balance as capital loss. As with net negative adjustments, these ordinary losses are not subject to the limitation imposed on miscellaneous itemized deductions under Section 67 of the Code. The deductibility of capital losses, however, is subject to limitations. Additionally, if you recognize a loss above certain thresholds, you might be required to file a disclosure statement with the IRS, although this is uncertain.

Special rules may apply if one or more contingent payments becomes fixed prior to maturity, including as a result of a commodity hedging disruption event (if applicable). The applicability of these rules, and their potential consequences, will depend upon the specific terms of the relevant offering. Additional details regarding this issue may be provided in the relevant terms supplement.

### ***Notes Treated as Open Transactions That Are Not Debt Instruments***

The following describes the material U.S. federal income tax consequences of owning and disposing of notes that the Issuer treats as open transactions that are not debt instruments for U.S. federal income tax purposes. The tax consequences of these notes are uncertain. There is no direct legal authority as to the proper U.S. federal income tax characterization of these notes, and the Issuer does not intend to request a ruling from the IRS regarding these notes.

*Tax Treatment Prior to Maturity.* You should not recognize taxable income or loss over the term of the notes prior to maturity other than pursuant to a sale or exchange (including early redemption or repurchase, acceleration or redemption at maturity) as described below.

*Sale, Exchange or Redemption of a Note Linked Only to Reference Currencies.* Upon a sale or exchange of a note linked only to one or more Reference Currencies (a “**Currency Note**”), you should recognize gain or loss equal to the difference between the amount realized on the sale or exchange and your tax basis in the note, which should equal the amount you paid to acquire the note. Your gain or loss will generally be ordinary foreign currency income or loss under Section 988 of the Code. Ordinary foreign currency losses are potentially subject to certain reporting requirements. However, investors in certain forward contracts, futures contracts or option contracts generally are entitled to make an election to treat foreign currency gain or loss as capital gain or loss (a “**Section 988 Election**”). Due to the lack of authority directly addressing the availability of the Section 988 Election for instruments such as these, it is unclear whether the Section 988 Election is available. If the Section 988 Election is available and you make this election before the close of the day on which you acquire a Currency Note, all gain or loss you recognize on a sale or exchange of that note should be treated as capital gain or loss, and as long-term capital gain or loss if you have held the note for more than one year at that time. A Section 988 Election with respect to a Currency Note is made by (a) clearly identifying the note on your books and records, on the date you acquire it, as being subject to this election and filing the relevant statement verifying this election with your U.S. federal income tax return or (b) obtaining independent verification under procedures set forth in the Treasury regulations under Section 988. You should consult your tax adviser regarding the advisability, availability, mechanics and consequences of a Section 988 Election, as well as the special reporting requirements that apply to foreign currency losses in excess of specified thresholds.

*Sale, Exchange or Redemption of a Note Linked Only to Commodities.* Upon a sale or exchange of a note linked only to one or more Commodities, Commodity Futures Contracts or Commodity Indices (together, “**Commodities**”) (a “**Commodity Note**”), you should recognize capital gain or loss equal to the difference between the amount realized on the sale or exchange and your tax basis in the note, which should equal the amount you paid to acquire the note. This gain or loss should be treated as capital gain or loss, and as long-term capital gain or loss if you have held the note for more than one year at that time. The deductibility of capital losses is subject to limitations.

*Sale, Exchange or Redemption of a Note Linked to Reference Currencies and Commodities.* Upon a sale or exchange of a note linked to both Reference Currencies and Commodities (a “**Mixed Note**”), you should recognize gain or loss equal to the difference between the amount realized on the sale or exchange and your tax basis in the note, which should equal the amount you paid to acquire the note. Subject to the possible application of Section 988 of the Code and the regulations thereunder, as

discussed in the next paragraph, this gain or loss should be treated as capital gain or loss, and as long-term capital gain or loss if you have held the note for more than one year at that time. The deductibility of capital losses is subject to limitations.

Because payment at maturity on a Mixed Note may be determined in part by reference to one or more foreign currencies, it is possible that some or all of your gain or loss from a sale or exchange of a Mixed Note could be treated as ordinary foreign currency income or loss under Section 988 of the Code. Due to the lack of authority, this issue is unclear. If the Section 988 Election is available and you make it before the close of the day on which you acquire a Mixed Note, all gain or loss you recognize on a sale or exchange of that note should be treated as capital gain or loss, and as long-term capital gain or loss if you have held the note for more than one year at that time. A Section 988 Election with respect to a Mixed Note would be made as described above under “—Sale, Exchange or Redemption of a Note Linked Only to Reference Currencies.” You should consult your tax adviser regarding the advisability, availability, mechanics and consequences of a Section 988 Election, as well as the special reporting requirements that apply to foreign currency losses in excess of specified thresholds.

*Uncertainties Regarding Tax Treatment as Open Transactions That Are Not Debt Instruments.* If the notes are treated as open transactions that are not debt instruments, due to the lack of controlling authority there remain significant additional uncertainties regarding the tax consequences of owning and disposing of them. For instance, you might be required to include amounts in income during the term of your notes and/or to treat all or a portion of the gain or loss on the sale or exchange of your notes as ordinary income or loss, even if you have made a valid Section 988 Election, or as short-term capital gain or loss, without regard to how long you have held them. 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; the relevance of factors such as the nature of the underlying property to which the instruments are linked; and the degree, if any, to which income (including any mandated accruals) realized by non-U.S. investors should be subject to withholding tax. 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 and adversely affect the tax consequences of an investment in the notes, possibly with retroactive effect.

Alternatively, you might be required to treat Currency Notes or Mixed Notes as foreign currency contracts within the meaning of Section 1256 of the Code. If Section 1256 were to apply to your notes, you would be required to mark them to market annually, as if they were sold at their fair market value on the last business day of the taxable year. Unless you had made a valid Section 988 Election, your gain or loss on marking your notes to market would be treated as ordinary in character. If you had made a valid Section 988 Election, your gain or loss would be treated as 40% short-term capital gain or loss and 60% long-term capital gain or loss, without regard to how long you had held the notes.

*Tax Consequences if Treated as Debt Instruments.* In 2007 the IRS issued a revenue ruling holding that a financial instrument issued and redeemed for U.S. dollars, but providing a return determined by reference to a foreign currency and related market interest rates, is a debt instrument denominated in the foreign currency. The revenue ruling, or future guidance relating thereto, could materially and adversely affect the tax consequences of an investment in Currency Notes or Mixed Notes for U.S. Holders, possibly with retroactive effect. In particular, if the notes are treated as debt instruments (which might be viewed as denominated either in U.S. dollars or a foreign currency), your tax consequences will be governed by the rules relating to the taxation of short-term obligations, as described above in “—Notes Treated as Debt Instruments That Have a Term of Not More than One Year,” if the term of the notes from issue to maturity (including either the issue date or the last possible date that the notes could be outstanding, but not both) is one year or less, and otherwise will generally be governed by the rules relating to the taxation of contingent payment debt instruments, as described above in “—Notes Treated as Debt Instruments That Have a Term of More than One Year.”

### ***Notes Treated as Prepaid Forward Contracts with Associated Contingent Coupons***

The following describes the material U.S. federal income tax consequences of owning and disposing of notes that the Issuer treats as prepaid forward contracts with associated contingent coupons for U.S. federal income tax purposes, insofar as the Issuer has tax reporting responsibilities with respect to them ("Contingent Coupon Notes"). The relevant terms supplement will indicate whether the Issuer intends to treat an offering of notes as Contingent Coupon Notes.

***Tax Treatment of Contingent Interest Payments.*** Although the U.S. federal income tax treatment of contingent interest payments (including any contingent interest payments made in connection with an early redemption or repurchase, acceleration or redemption at maturity) is uncertain, the Issuer expects (in the absence of an administrative determination or judicial ruling to the contrary) to treat any contingent interest payments with respect to the notes as ordinary income, unless otherwise indicated in the relevant terms supplement.

***Sale, Exchange or Redemption of a Currency Note.*** Upon a sale or exchange (including early redemption or repurchase, acceleration or redemption at maturity) of a Contingent Coupon Note that is a Currency Note (as defined above in "— Notes Treated as Open Transactions That Are Not Debt Instruments — Sale, Exchange or Redemption of a Note Linked Only to Reference Currencies"), you should recognize gain or loss equal to the difference between the amount realized on the sale or exchange and your tax basis in the note, which should equal the amount you paid to acquire the note (assuming contingent interest payments are properly treated as described above). Your gain or loss will generally be ordinary foreign currency income or loss under Section 988 of the Code (other than amounts attributable to contingent interest payments, which the Issuer intends to treat as ordinary income, consistent with the position described above). Ordinary foreign currency losses are potentially subject to certain reporting requirements. As discussed above in "— Notes Treated as Open Transactions That Are Not Debt Instruments — Sale, Exchange or Redemption of a Note Linked Only to Reference Currencies," investors in certain forward contracts, futures contracts or option contracts generally are entitled to make a Section 988 Election to treat foreign currency gain or loss as capital gain or loss. It is unlikely that a Section 988 Election is available with respect to Contingent Coupon Notes that are Currency Notes. You should consult your tax adviser regarding the advisability, availability, mechanics and consequences of making a Section 988 Election.

***Sale, Exchange or Redemption of a Commodity Note.*** Upon a sale or exchange of a Contingent Coupon Note that is a Commodity Note (as defined above in "— Notes Treated as Open Transactions That Are Not Debt Instruments — Sale, Exchange or Redemption of a Note Linked Only to Commodities"), you should recognize capital gain or loss equal to the difference between the amount realized on the sale or exchange and your tax basis in the note, which should equal the amount you paid to acquire the note (assuming contingent interest payments are properly treated as ordinary income, consistent with the position described above). This gain or loss should be long-term capital gain or loss if you have held the note for more than one year at that time. The deductibility of capital losses is subject to limitations. If you sell your note between the time your right to a contingent interest payment is fixed and the time it is paid, it is likely that you will be treated as receiving ordinary income equal to the contingent interest payment. Although uncertain, it is possible that proceeds received from the sale or exchange of your note prior to a Determination Date but that can be attributed to an expected contingent interest payment could be treated as ordinary income. You should consult your tax adviser regarding this issue.

***Sale, Exchange or Redemption of a Mixed Note.*** Upon a sale or exchange of a Contingent Coupon Note that is a Mixed Note (as defined above in "— Notes Treated as Open Transactions That Are Not Debt Instruments — Sale, Exchange or Redemption of a Note Linked to Reference Currencies and Commodities"), you should recognize gain or loss equal to the difference between the amount realized on the sale or exchange and your tax basis in the note, which should equal the amount you paid to acquire the note (assuming contingent interest payments are properly treated as ordinary income, consistent with the position described above). Subject to the possible application of Section 988 of the Code and the regulations thereunder, as discussed in the next paragraph, this gain or loss should be capital gain or loss



and should be long-term capital gain or loss if you have held the note for more than one year at that time. The deductibility of capital losses is subject to limitations.

Because payments on a Mixed Note may be determined in part by reference to foreign currencies, it is possible that some or all of your gain or loss from a sale or exchange of a Mixed Note could be treated as ordinary foreign currency income or loss under Section 988 of the Code (other than amounts attributable to contingent interest payments, which the Issuer intends to treat as described above). If and to the extent Section 988 applies to a Contingent Coupon Note that is a Mixed Note, it is unlikely that a Section 988 Election is available to treat the relevant gain or loss as capital gain or loss. You should consult your tax adviser regarding the advisability, availability, mechanics and consequences of making a Section 988 Election in this circumstance.

*Uncertainties Regarding Tax Treatment as Prepaid Forward Contracts with Associated Contingent Coupons.* If the offered notes are Contingent Coupon Notes, due to the lack of controlling authority there remain significant uncertainties regarding the tax consequences of owning and disposing of them. For instance, you might be required to include amounts in income during the term of your notes in addition to the contingent interest payments you receive, and/or to treat all or a portion of the gain or loss on the sale or exchange of your notes (in addition to any amounts attributable to an unpaid contingent interest payment and amounts treated as ordinary income under Section 988) as ordinary income or loss or as short-term capital gain or loss, without regard to how long you have held these notes. In addition, in 2007, the IRS issued a revenue ruling holding that a financial instrument with some arguable similarity to Contingent Coupon Notes that are Currency Notes is properly treated as a debt instrument denominated in a foreign currency. The Contingent Coupon Notes are distinguishable in meaningful respects from the instrument described in the revenue ruling. If, however, the reach of the revenue ruling were to be extended, it could materially affect the tax consequences of an investment in Contingent Coupon Notes that are Currency Notes or Mixed Notes, possibly with retroactive effect.

Moreover, 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, as described above in “— Notes Treated as Open Transactions That Are Not Debt Instruments — Uncertainties Regarding Tax Treatment as Open Transactions That Are Not Debt Instruments.” You should consult your tax adviser regarding the U.S. federal income tax consequences of an investment in Contingent Coupon Notes, including possible alternative treatments.

### **Tax Consequences to Non-U.S. Holders**

You are a “Non-U.S. Holder” if for U.S. federal income tax purposes you are a beneficial owner of a note that is:

- a nonresident alien individual;
- a foreign corporation; or
- a foreign estate or trust.

You are not a “Non-U.S. Holder” for purposes of this discussion if you are an individual present in the United States for 183 days or more in the taxable year of disposition of a note (including early redemption or repurchase, acceleration or redemption at maturity). In this case, you should consult your tax adviser regarding the U.S. federal income tax consequences of the disposition.

If the notes are properly treated as debt instruments, subject to the discussion of “FATCA,” below, any income or gain from a note will be exempt from U.S. federal income or withholding tax if you provide a properly completed applicable IRS Form W-8 and these amounts are not effectively connected with your conduct of a U.S. trade or business.

If the notes are properly treated as open transactions that are not debt instruments, subject to the discussions of backup withholding and “FATCA,” below, any income or gain from a note should also not be subject to U.S. federal income or withholding tax if these amounts are not effectively connected with your conduct of a U.S. trade or business (and, if an applicable income tax treaty so requires, attributable to a permanent establishment in the United States). However, because this treatment is uncertain, you will likely be subject to withholding unless you provide a properly completed applicable IRS Form W-8. Further, among the issues addressed in the notice described above in “— Tax Consequences to U.S. Holders — Notes Treated as Open Transactions That Are Not Debt Instruments — Uncertainties Regarding Tax Treatment as Open Transactions That Are Not Debt Instruments” is the degree, if any, to which income with respect to instruments described therein should be subject to U.S. withholding tax. It is possible that any Treasury regulations or other guidance promulgated after consideration of these issues could materially and adversely affect the withholding tax consequences of an investment in these notes, possibly with retroactive effect.

For notes that the Issuer treats as prepaid forward contracts with associated contingent coupons, although the Issuer believes it is reasonable to take a position that contingent interest payments made on those notes are not subject to withholding tax (at least if a properly completed applicable IRS Form W-8 is provided, and subject to the discussion of “FATCA,” below), 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 U.S. trade or business (and, if an applicable income tax treaty so requires, is attributable to a permanent establishment in the United States). In the event of any withholding, the Issuer will not be required to pay any additional amounts with respect to amounts so withheld.

If you are engaged in a U.S. trade or business, and if income or gain from a note is effectively connected with your conduct of that trade or business (and, if an applicable income tax treaty so requires, is attributable to a permanent establishment in the United States), although exempt from the withholding tax discussed above, you generally will be taxed in the same manner as a U.S. Holder with respect to that income. You will not be subject to withholding in this case if you provide a properly completed IRS Form W-8ECI. If this paragraph applies to you, you should consult your tax adviser with respect to other U.S. tax consequences of owning and disposing of notes, including the possible imposition of a 30% branch profits tax if you are a corporation.

### ***Federal Estate Tax***

Individual Non-U.S. Holders, and entities the property of which is potentially includible in those individuals' gross estates for U.S. federal estate tax purposes (for example, a trust funded by such an individual and with respect to which the individual has retained certain interests or powers), should note that, absent an applicable treaty benefit, a note that is properly treated as a debt instrument for U.S. federal income tax purposes will not be treated as U.S.-situs property subject to U.S. federal estate tax, provided that your income from the note is not then effectively connected with your conduct of a U.S. trade or business. A note properly treated as an open transaction that is not a debt instrument or as a prepaid forward contract with associated contingent coupons, however, is likely to be treated as U.S.-situs property, subject to U.S. federal estate tax. If this paragraph applies to you, you should consult your tax adviser regarding the U.S. federal estate tax consequences of an investment in the notes.

### **Backup Withholding and Information Reporting**

You may be subject to information reporting. You may also be subject to backup withholding on payments in respect of your notes unless you provide proof of an applicable exemption or a correct taxpayer identification number and otherwise comply with applicable requirements of the backup withholding rules. If you are a Non-U.S. Holder, you will not be subject to backup withholding if you provide a properly completed applicable IRS Form W-8. Amounts withheld under the backup withholding rules are not additional taxes, and may be refunded or credited against your U.S. federal income tax liability, provided the required information is timely furnished to the IRS.

## **FATCA**

Legislation commonly referred to as “FATCA,” and regulations promulgated thereunder, generally impose a 30% withholding tax on payments to certain foreign entities (including financial intermediaries) unless various U.S. information reporting and due diligence requirements have been satisfied. An intergovernmental agreement between the United States and the foreign entity’s jurisdiction may modify these requirements. This regime may apply to amounts properly treated as interest or other “fixed or determinable annual or periodical” income (“FDAP Income”) for U.S. federal income tax purposes paid with respect to a note. If a note is treated in whole or in part as indebtedness, withholding could also apply to payments of gross proceeds of a taxable disposition, including early redemption or repurchase, acceleration or redemption at maturity. However, under regulations proposed in 2018 (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.

The Issuer will not pay any additional amounts with respect to any withholding tax.

**THE TAX CONSEQUENCES TO YOU OF OWNING AND DISPOSING OF NOTES ARE UNCERTAIN. YOU SHOULD CONSULT YOUR TAX ADVISER REGARDING THE TAX CONSEQUENCES OF OWNING AND DISPOSING OF NOTES, INCLUDING THE TAX CONSEQUENCES UNDER STATE, LOCAL AND NON-U.S. TAX LAWS AND THE POSSIBLE EFFECTS OF CHANGES IN U.S. FEDERAL OR OTHER TAX LAWS.**

## PLAN OF DISTRIBUTION (CONFLICTS OF INTEREST)

Under (a) the terms and subject to the conditions contained in the Master Agency Agreement entered into between JPMorgan Chase & Co., as issuer, and J.P. Morgan Securities LLC, as agent (with respect to notes issued by JPMorgan Chase & Co., an “**Agent**” or “**JPMS**”), and certain other agents that are or may become party to that Master Agency Agreement, as amended or supplemented, from time to time (with respect to notes issued by JPMorgan Chase & Co., each an “**Agent**” and collectively with JPMS, the “**Agents**”) and (b) the terms and subject to the conditions contained in the Master Agency Agreement entered into among JPMorgan Financial, as issuer, JPMorgan Chase & Co., as guarantor, and J.P. Morgan Securities LLC, as agent (with respect to notes issued by JPMorgan Financial, an “**Agent**” or “**JPMS**”), and certain other agents that are or may become party to that Master Agency Agreement, as amended or supplemented, from time to time (with respect to notes issued by JPMorgan Financial, each an “**Agent**” and collectively with JPMS, the “**Agents**”), JPMS has agreed and any additional Agents will agree to use reasonable efforts to solicit offers to purchase the principal amount of notes set forth in the cover page of the relevant terms supplement.

The Issuer will have the sole right to accept offers to purchase the notes and may reject any offer in whole or in part. Each Agent may reject, in whole or in part, any offer it solicited to purchase notes. The Issuer will pay an Agent, in connection with sales of these notes resulting from a solicitation that Agent made or an offer to purchase that Agent received, a commission as set forth in the relevant terms supplement. An Agent will allow a concession to other dealers, or the Issuer may pay other fees, in the amount set forth on the cover page of the relevant terms supplement.

The Issuer may also sell notes to an Agent as principal for its own account at discounts to be agreed upon at the time of sale as disclosed in the relevant terms supplement. That Agent may resell notes to investors and other purchasers at a fixed offering price or at prevailing market prices, or prices related thereto at the time of resale or otherwise, as that Agent determines and as the Issuer will specify in the relevant terms supplement. An Agent may offer the notes it has purchased as principal to other dealers. That Agent may sell the notes to any dealer at a discount and, unless otherwise specified in the relevant terms supplement, the discount allowed to any dealer will not be in excess of the discount that Agent will receive from the Issuer. After the initial public offering of notes that the Agent is to resell on a fixed public offering price basis, the Agent may change the public offering price, concession and discount.

The Issuer’s and the Guarantor’s (if applicable) affiliates, including JPMS, may use this product supplement, any accompanying underlying supplement and the prospectus supplement, prospectus or terms supplement in connection with offers and sales of the notes in the secondary market. JPMS or another Agent may act as principal or agent in connection with offers and sales of the notes in the secondary market. Secondary market offers and sales will be made at prices related to market prices at the time of that offer or sale; accordingly, the Agents or a dealer may change the public offering price, concession and discount after the offering has been completed.

Unless otherwise specified in the relevant terms supplement, there is currently no public trading market for the notes. In addition, unless otherwise specified in the relevant terms supplement, the Issuer has not applied and does not intend to apply to list the notes on any securities exchange or to have the notes quoted on a quotation system. JPMS may act as a market-maker for the notes. However, JPMS is not obligated to do so and may discontinue any market-making in the notes at any time in its sole discretion. Therefore, there are no assurances that a liquid trading market for the notes will develop, that you will be able to sell your notes at a particular time or that the price you receive if you sell your notes will be favorable.

In connection with an offering of the notes, JPMS may engage in overallotment, stabilizing transactions and syndicate covering transactions in accordance with Regulation M under the Securities Exchange Act of 1934. Overallotment involves sales in excess of the offering size, which create a short position for JPMS. Stabilizing transactions involve bids to purchase the notes in the open market for the purpose of pegging, fixing or maintaining the price of the notes. Syndicate covering transactions involve purchases of the notes in the open market after the distribution has been completed in order to cover

short positions. Stabilizing transactions and syndicate covering transactions may cause the price of the notes to be higher than it would otherwise be in the absence of those transactions. If JPMS engages in stabilizing or syndicate covering transactions, it may discontinue them at any time.

Certain of the Agents engage in transactions with and perform services for the Issuer, the Guarantor (if applicable) and their affiliates in the ordinary course of business.

No action has been or will be taken by the Issuer, the Guarantor (if applicable), JPMS or any dealer that would permit a public offering of the notes or possession or distribution of this product supplement, any accompanying underlying supplement or the prospectus supplement, prospectus or terms supplement, other than in the United States, where action for that purpose is required. No offers, sales or deliveries of the notes, or distribution of the relevant terms supplement, this product supplement, any underlying supplement, the prospectus supplement or the prospectus or any other offering material relating to the notes, may be made in or from any jurisdiction except in circumstances which will result in compliance with any applicable laws and regulations and will not impose any obligations on the Issuer, the Guarantor (if applicable), the Agents or any dealer.

Each Agent has represented and agreed that it will not offer or sell the notes in any non-U.S. jurisdiction (i) if that offer or sale would not be in compliance with any applicable law or regulation or (ii) if any consent, approval or permission is needed for that offer or sale by that Agent or for or on the Issuer's or the Guarantor's (if applicable) behalf, unless the consent, approval or permission has been previously obtained. The Issuer and the Guarantor (if applicable) will have no responsibility for, and the applicable Agent will obtain, any consent, approval or permission required by that Agent for the subscription, offer, sale or delivery by that Agent of the notes, or the distribution of any offering materials, under the laws and regulations in force in any non-U.S. jurisdiction to which that Agent is subject or in or from which that Agent makes any subscription, offer, sale or delivery. For additional information regarding selling restrictions, please see "Notice to Investors; Selling Restrictions" in the accompanying prospectus supplement.

Unless otherwise specified in the relevant terms supplement, the settlement date for the notes will be the third business day following the pricing date (which is referred to as a "T+3" settlement cycle). 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.

### **Conflicts of Interest**

JPMS has a "conflict of interest" within the meaning of FINRA Rule 5121 in any offering of the notes in which it participates because JPMorgan Chase & Co. owns, directly or indirectly, all of the outstanding equity securities of JPMS, because JPMS and JPMorgan Financial are under common control by JPMorgan Chase & Co. and because the net proceeds received from the sale of the notes will be used, in part, by JPMS or its affiliates in connection with hedging the Issuer's obligations under the notes. The offer and sale of the notes by JPMS will comply with the requirements of FINRA Rule 5121 regarding a FINRA member firm's participation in a public offering of notes of an affiliate. In accordance with FINRA Rule 5121, neither JPMS nor any other affiliated underwriter, agent or dealer of the Issuer may sell the notes to any of its discretionary accounts without the specific written approval of the customer.

## BENEFIT PLAN INVESTOR CONSIDERATIONS

A fiduciary of a pension, profit-sharing or other employee benefit plan subject to Title I of the Employee Retirement Income Security Act of 1974, as amended ("**ERISA**"), including entities such as collective investment funds, partnerships and separate accounts whose underlying assets include the assets of such plans (collectively, "**ERISA Plans**"), should consider the fiduciary standards of ERISA in the context of the ERISA Plan's particular circumstances before authorizing an investment in the notes. Among other factors, the fiduciary should consider whether the investment would satisfy the prudence and diversification requirements of ERISA and would be consistent with the documents and instruments governing the ERISA Plan.

Section 406 of ERISA and Section 4975 of the Code prohibit ERISA Plans, as well as plans (including individual retirement accounts and Keogh plans) subject to Section 4975 of the Code (together with ERISA Plans, "**Plans**"), from engaging in certain transactions involving the "plan assets" with persons who are "parties in interest" under ERISA or "disqualified persons" under Section 4975 of the Code (in either case, referred to herein as "**Parties in Interest**") with respect to such Plans. As a result of JPMorgan Chase & Co.'s business, it, and its current and future affiliates (including JPMorgan Financial), may be Parties in Interest with respect to many Plans. Where the Issuer or the Guarantor (or one of their affiliates) is a Party in Interest with respect to a Plan (either directly or by reason of such entity's ownership interests in its directly or indirectly owned subsidiaries), the purchase and holding of the notes by or on behalf of the Plan could be a prohibited transaction under Section 406 of ERISA and/or Section 4975 of the Code, unless statutory or administrative exemptive relief were available.

In this regard, certain prohibited transaction class exemptions ("**PTCEs**") issued by the U.S. Department of Labor may provide exemptive relief for direct or indirect prohibited transactions resulting from the purchase or holding of the notes. Those class exemptions are PTCE 96-23 (for certain transactions determined by in-house asset managers), PTCE 95-60 (for certain transactions involving insurance company general accounts), PTCE 91-38 (for certain transactions involving bank collective investment funds), PTCE 90-1 (for certain transactions involving insurance company separate accounts) and PTCE 84-14 (for certain transactions determined by independent qualified asset managers). In addition, ERISA Section 408(b)(17) and Section 4975(d)(20) of the Code may provide a limited exemption for the purchase and sale of the notes and related lending transactions, *provided* that neither the issuer of the notes nor any of its affiliates have or exercise any discretionary authority or control or render any investment advice with respect to the assets of the Plan involved in the transaction and provided further that the Plan pays no more, and receives no less, than adequate consideration in connection with the transaction (the so-called "service provider exemption"). There can be no assurance that any of these statutory or class exemptions will be available with respect to transactions involving the notes.

Accordingly, the notes may not be purchased or held by any Plan, any entity whose underlying assets include "plan assets" by reason of any Plan's investment in the entity (a "**Plan Asset Entity**") or any person investing "plan assets" of any Plan, unless such purchaser or holder is eligible for the exemptive relief available under PTCE 96-23, 95-60, 91-38, 90-1 or 84-14 or the service-provider exemption or there is some other basis on which the purchase and holding of the notes will not constitute or result in a non-exempt prohibited transaction under ERISA or Section 4975 of the Code. Each purchaser or holder of the notes or any interest therein will be deemed to have represented by its purchase or holding of the notes that (a) it is not a Plan or a Plan Asset Entity and its purchase and holding of the notes is not made on behalf of or with "plan assets" of any Plan or a Plan Asset Entity or (b) its purchase and holding of the notes will not constitute or result in a non-exempt prohibited transaction under Section 406 of ERISA or Section 4975 of the Code.

In this regard, certain governmental plans (as defined in Section 3(32) of ERISA), church plans (as defined in Section 3(33) of ERISA) and non-U.S. plans (as described in Section 4(b)(4) of ERISA) ("**Non-ERISA Arrangements**") are not subject to these "prohibited transaction" rules of ERISA or Section 4975 of the Code, but may be subject to similar rules under other applicable laws or regulations ("**Similar Laws**"). Accordingly, each such purchaser or holder of the notes will be required to represent (and

deemed to have represented by its purchase or holding of the notes) that such purchase and holding will not constitute or result in a violation of any applicable Similar Laws.

Due to the complexity of these rules, it is particularly important that fiduciaries or other persons considering purchasing the notes on behalf of or with “plan assets” of any Plan, Plan Asset Entity or Non-ERISA Arrangement consult with their counsel regarding the relevant provisions of ERISA, the Code or applicable Similar Laws and the availability of exemptive relief under PTCE 96-23, 95-60, 91-38, 90-1, 84-14, the service provider exemption or some other basis on which the acquisition and holding will not constitute or result in a non-exempt prohibited transaction under ERISA or Section 4975 of the Code or a violation of any applicable Similar Laws.

The notes are contractual financial instruments. The financial exposure provided by the notes is not a substitute or proxy for, and is not intended as a substitute or proxy for, individualized investment management or advice for the benefit of any purchaser or holder of the notes. The notes have not been designed and will not be administered in a manner intended to reflect the individualized needs and objectives of any purchaser or holder of the notes.

Each purchaser or holder of any notes acknowledges and agrees that:

- (i) the purchaser or holder or its fiduciary has made and will make all investment decisions for the purchaser or holder and the purchaser or holder has not relied and will not rely in any way upon the Issuer, the Guarantor (if applicable) or any of their affiliates to act as a fiduciary or adviser of the purchaser or holder with respect to (A) the design and terms of the notes, (B) the purchaser or holder’s investment in the notes, or (C) the exercise of or failure to exercise any rights the purchaser or holder or the Issuer or the Guarantor (if applicable) has under or with respect to the notes;
- (ii) the Issuer and its affiliates have acted and will act solely for the Issuer’s own account in connection with (A) all transactions relating to the notes and (B) all hedging transactions in connection with its obligations under the notes;
- (iii) any and all assets and positions relating to hedging transactions by the Issuer or its affiliates are assets and positions of those entities and are not assets and positions held for the benefit of the purchaser or holder;
- (iv) the Issuer’s and the Guarantor’s (if applicable) interests are adverse to the interests of the purchaser or holder; and
- (v) none of the Issuer, the Guarantor (if applicable) and any of their affiliates is a fiduciary or adviser of the purchaser or holder in connection with any such assets, positions or transactions, and any information that the Issuer, the Guarantor (if applicable) or any of their affiliates may provide is not intended to be impartial investment advice.

Each purchaser and holder of the notes has exclusive responsibility for ensuring that its purchase, holding and subsequent disposition of the notes does not violate the fiduciary or prohibited transaction rules of ERISA, the Code or any applicable Similar Laws. The sale of any notes to any Plan, Plan Asset Entity or Non-ERISA Arrangement is in no respect a representation or advice by the Issuer, the Guarantor (if applicable) or any of their affiliates or representatives as to whether such an investment is appropriate for, or meets all relevant legal requirements with respect to investments by, Plans, Plan Asset Entities or Non-ERISA Arrangements generally or any particular Plan, Plan Asset Entity or Non-ERISA Arrangement.