

Commodity Price Outlook & Risks

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This monthly report presents a price outlook and risk assessment for selected commodities as depicted from futures and options markets.

Outlook. Since mid October oil spot prices have declined marginally to 45 dollars from 46 dollars; however, futures markets show prices modestly increasing over the next year. Uncertainty about its outlook is still substantial following geopolitical risks in oil-producing countries, as well as more subdued aggregate demand growth and sustained oil production. Following seasonal patterns, gasoline prices are expected to remain at current level in the colder months and rise throughout the next summer, while U.S. natural gas prices are projected to rise through the coming winter. Metal and agricultural prices are still expected to remain broadly unchanged, mainly due to continued slow demand. El Nino event could affect both agricultural and fuel prices as heating and cooling demand would change.

Risks. The likelihood of per-barrel prices for WTI falling below \$30 in the next 12 months remained at 7 percent, while the likelihood of Brent falling below \$30 increased to 6 percent, about 2 percentage points higher than last month. The likelihood of WTI and Brent oil prices rising above \$70 decreased, signaling a downward shift in the balance of risks.

The likelihood of per-MMBtu U.S. natural gas prices below \$1.5 (12 months forward) increased to 6 percent from 2 percent, while the probability of prices rising above \$3.5 decreased to 6 percent from 9 percent, suggesting a downward shift in price uncertainty.

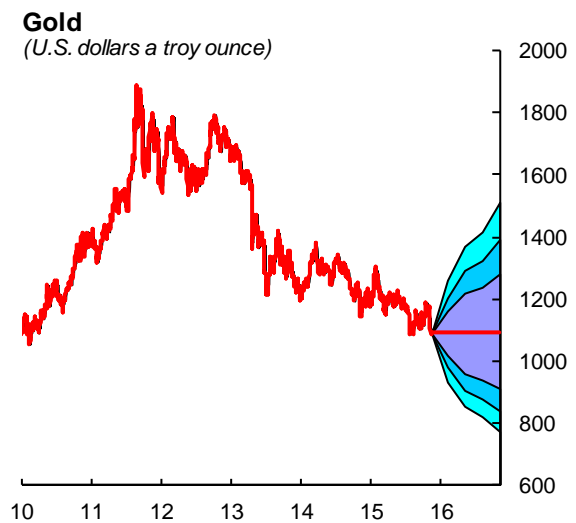
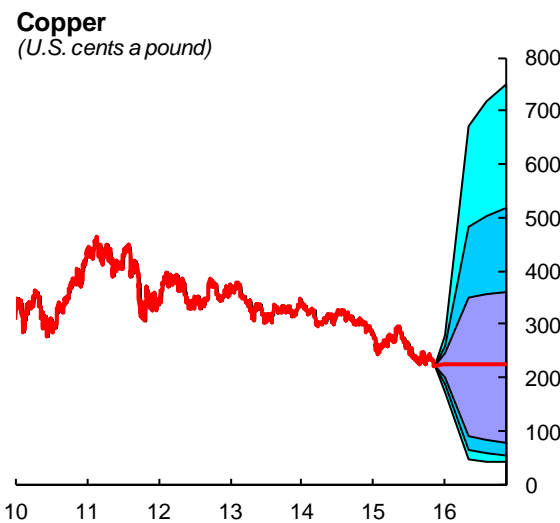
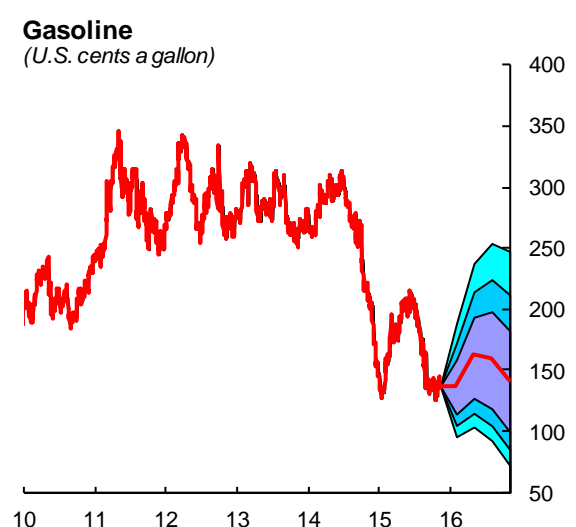
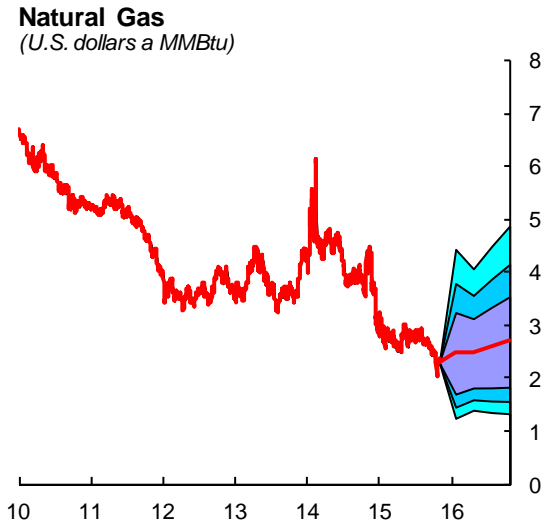
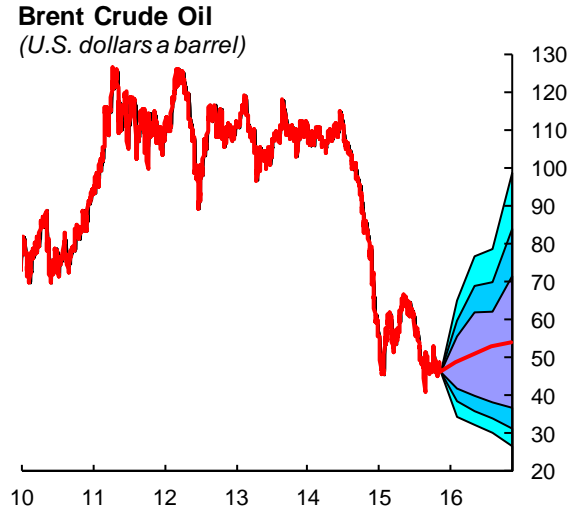
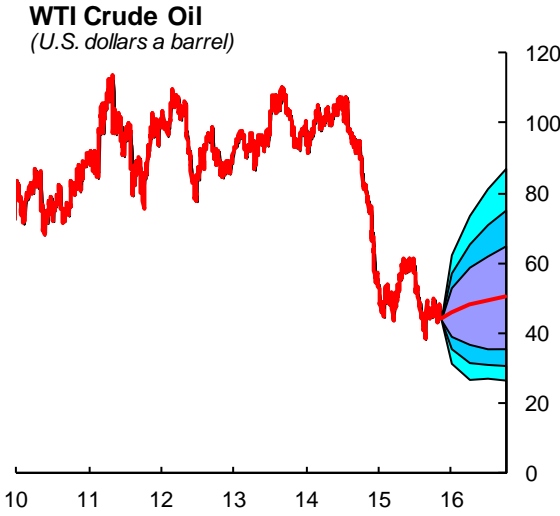
For metals, the risk of copper prices falling below \$1 a pound increased to 10 percent, and the probability of prices increasing above \$3 a pound dropped to 9 percent from 11 percent, amid weak demand and sustained supply increases. The probability of gold prices falling below \$900 a troy ounce increased to 17 percent from 10 percent, while the probability of an increase beyond \$1400 decreased to 4 percent from 9 percent last month.

The likelihood of per bushel corn prices below \$2.5 remained broadly unchanged at 4 percent, while the probability of prices increasing above \$5 decreased to 7 percent from 8 percent in September. The likelihood of soybean meal prices rising above \$400 a short ton dropped to 4 percent from 5 percent. Meanwhile, the likelihood of per-bushel soybean prices below \$6 increased to 7 percent from 5 percent, and the probability of an increase above \$11 slightly decreased to 8 percent, still reflecting abundant supplies.

Contents. Fan charts (pages 2-3) show historical and forward futures prices (red line), with calculated confidence intervals of +/- 2 standard deviations (in purple/blue). Confidence intervals are derived from prices of options on November 10, 2015. Likelihoods of spot prices rising/falling from specified price thresholds occurring at the 3-, 6-, 9- and 12-month forward (or closest available) horizons for each commodity are shown in tabular form (pages 4-5). In addition to price thresholds, the probability of each commodity spot price rising/falling by a certain percentage is shown (pages 6-7). Relevant contract specifications for each commodity are also shown (page 8).

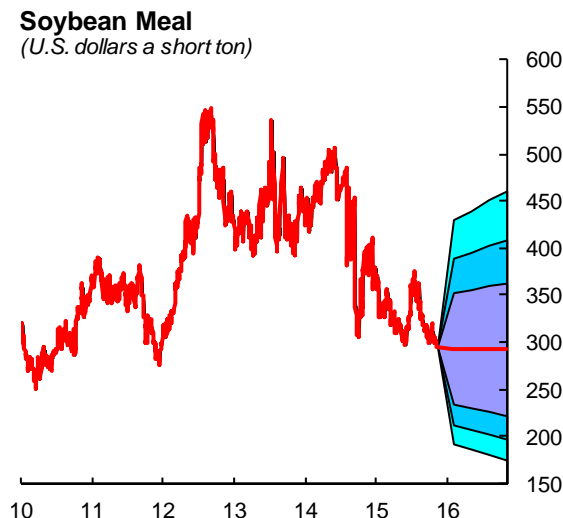
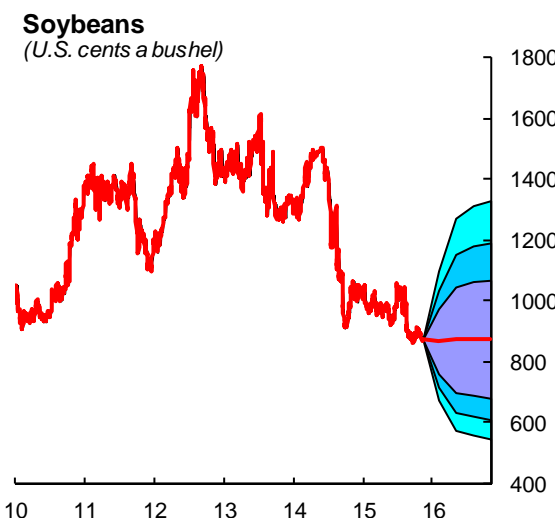
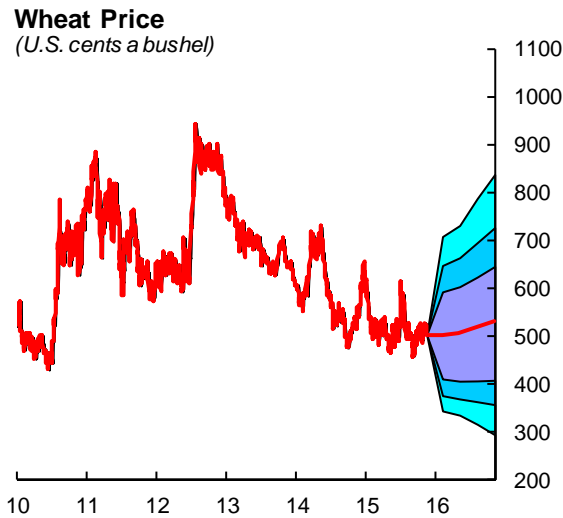
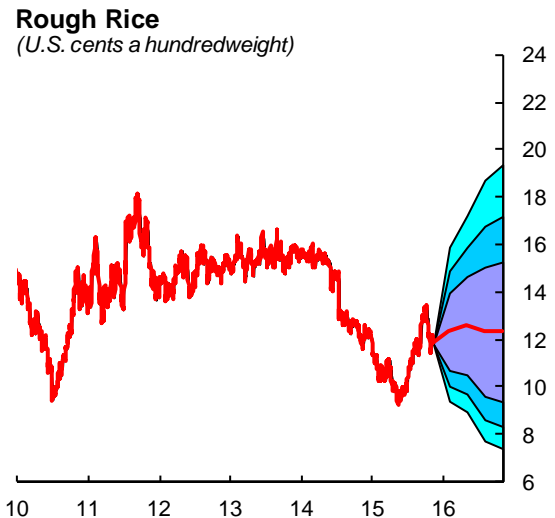
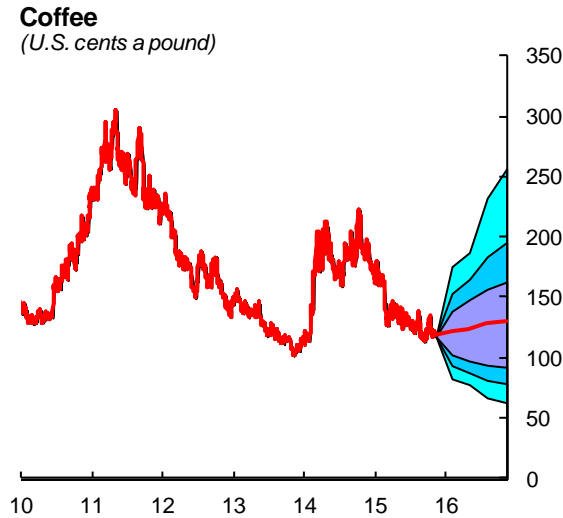
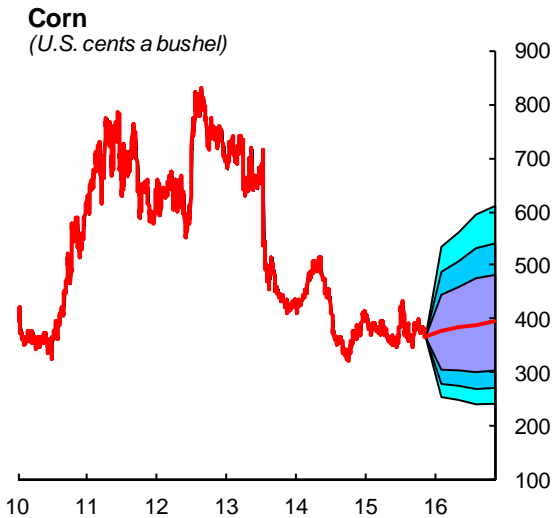
Selected Commodities—Market Price Outlook and Risks

■ 95% confidence interval
 ■ 86% confidence interval
 ■ 68% confidence interval
 — Futures



Selected Commodities—Market Price Outlook and Risks (concluded)

▬ 95% confidence interval
 ▬ 86% confidence interval
 ▬ 68% confidence interval
 ▬ Futures



Options-based Price Thresholds

WTI Crude Oil

(probabilities in percent; prices in U.S. dollars a barrel)

Threshold Prices	Months Forward			
	3	6	9	12
< 20	0.0	0.1	0.1	0.1
< 30	1.9	5.9	6.5	7.2
< 40	23.6	30.7	36.8	36.4
< 50	78.9	70.1	71.6	69.4
> 60	2.1	7.4	9.4	11.3
> 70	0.2	1.4	2.6	3.6
> 80	0.0	0.3	0.6	1.0
> 90	0.0	0.1	0.2	0.3
> 100	0.0	0.0	0.0	0.1
> 110	0.0	0.0	0.0	0.0
> 120	0.0	0.0	0.0	0.0

Brent Crude Oil

(probabilities in percent; prices in U.S. dollars a barrel)

Threshold Prices	Months Forward			
	3	6	9	12
< 20	0.0	0.0	0.0	0.1
< 30	0.9	1.2	2.6	6.1
< 40	12.2	20.5	26.0	30.3
< 50	65.8	60.8	64.4	61.2
> 60	4.1	12.0	11.6	17.4
> 70	0.5	2.7	2.9	6.8
> 80	0.1	0.5	0.6	2.4
> 90	0.0	0.1	0.1	0.8
> 100	0.0	0.0	0.0	0.3
> 110	0.0	0.0	0.0	0.1
> 120	0.0	0.0	0.0	0.0

U.S. Natural Gas

(probabilities in percent; prices in U.S. dollars an MMBtu)

Threshold Prices	Months Forward			
	3	6	9	12
< 1.00	0.2	0.0	0.1	0.1
< 1.50	8.7	4.8	5.7	6.2
< 2.00	38.2	32.1	31.8	31.1
> 2.50	30.2	32.1	35.2	37.6
> 3.00	11.7	10.9	14.0	16.4
> 3.50	3.9	3.0	4.7	6.2
> 4.00	1.2	0.8	1.5	2.2
> 4.50	0.4	0.2	0.4	0.7
> 5.00	0.1	0.0	0.1	0.2
> 5.50	0.0	0.0	0.0	0.1
> 6.00	0.0	0.0	0.0	0.0

Gasoline

(probabilities in percent; prices in U.S. dollars a gallon)

Threshold Prices	Months Forward			
	3	6	9	12
< 1.00	4.7	2.2	6.3	18.0
< 1.25	36.8	19.4	28.9	47.3
< 1.50	79.9	52.9	59.4	74.1
> 1.75	3.6	19.4	18.1	10.6
> 2.00	0.5	6.1	6.8	3.9
> 2.25	0.1	1.6	2.3	1.4
> 2.50	0.0	0.4	0.7	0.5
> 2.75	0.0	0.1	0.2	0.2
> 3.00	0.0	0.0	0.1	0.1
> 3.25	0.0	0.0	0.0	0.0
> 3.50	0.0	0.0	0.0	0.0

Copper

(probabilities in percent; prices in U.S. dollars a pound)

Threshold Prices	Months Forward			
	3	6	9	12
< 1.0	0.0	8.1	9.0	9.7
< 1.5	0.4	34.9	36.2	37.1
< 2.0	16.9	62.8	63.5	64.0
< 2.5	89.7	81.1	81.2	81.4
> 3.0	0.6	9.1	9.2	9.2
> 3.5	0.0	4.3	4.4	4.5
> 4.0	0.0	2.0	2.1	2.2
> 4.5	0.0	1.0	1.0	1.1
> 5.0	0.0	0.5	0.5	0.5
> 5.5	0.0	0.2	0.3	0.3
> 6.0	0.0	0.1	0.1	0.1

Gold

(probabilities in percent; prices in U.S. dollars a troy ounce)

Threshold Prices	Months Forward			
	3	6	9	12
< 800	0.2	0.7	1.9	4.6
< 900	1.7	7.5	11.4	16.8
< 1000	12.3	29.4	33.7	37.7
< 1100	60.1	60.5	61.3	60.7
> 1200	6.2	15.7	17.5	21.0
> 1300	1.0	4.6	6.3	9.7
> 1400	0.2	1.0	1.9	4.0
> 1500	0.1	0.2	0.5	1.5
> 1600	0.0	0.0	0.1	0.5
> 1700	0.0	0.0	0.0	0.2
> 1800	0.0	0.0	0.0	0.0

Options-based Price Thresholds (concluded)

Corn

(probabilities in percent; prices in U.S. dollars a bushel)

Threshold Prices	Months Forward			
	3	6	9	12
< 2.5	2.2	2.9	4.1	3.8
< 3.0	16.2	17.2	19.1	18.0
< 3.5	45.3	44.4	44.4	42.8
> 4.0	26.3	29.0	31.0	32.5
> 4.5	9.8	12.2	14.6	15.5
> 5.0	3.0	4.3	6.0	6.5
> 5.5	0.8	1.3	2.2	2.5
> 6.0	0.2	0.4	0.8	0.9
> 6.5	0.0	0.1	0.3	0.3
> 7.0	0.0	0.0	0.1	0.1
> 7.5	0.0	0.0	0.0	0.1

Coffee

(probabilities in percent; prices in U.S. dollars a pound)

Threshold Prices	Months Forward			
	3	6	9	12
< 0.6	0.1	0.2	0.9	1.2
< 0.8	2.0	3.3	6.3	7.7
< 1.0	14.7	22.7	26.8	28.6
< 1.2	58.5	58.0	58.5	58.4
> 1.4	9.9	15.6	17.7	19.1
> 1.6	2.5	4.5	6.5	7.7
> 1.8	0.7	1.2	2.4	3.0
> 2.0	0.2	0.3	1.0	1.3
> 2.2	0.1	0.1	0.4	0.6
> 2.4	0.0	0.1	0.2	0.3
> 2.6	0.0	0.0	0.1	0.2

Rough Rice

(probabilities in percent; prices in U.S. dollars a hundredweight)

Threshold Prices	Months Forward			
	3	6	9	12
< 0.06	0.0	0.0	0.1	0.2
< 0.07	0.0	0.0	0.8	1.4
< 0.08	0.1	0.5	3.9	5.4
< 0.09	1.4	3.3	11.7	14.2
< 0.10	8.1	12.0	24.8	27.7
> 0.11	74.7	71.8	58.7	56.4
> 0.12	49.8	51.1	42.0	40.8
> 0.13	26.8	31.8	27.8	27.6
> 0.14	11.7	17.3	17.2	17.6
> 0.15	4.3	8.4	10.0	10.7
> 0.16	1.3	3.7	5.5	6.2

Wheat

(probabilities in percent; prices in U.S. dollars a bushel)

Threshold Prices	Months Forward			
	3	6	9	12
< 2	0.0	0.0	0.1	0.2
< 3	0.4	0.6	1.5	2.3
< 4	15.2	17.0	17.0	16.8
> 5	39.9	40.2	43.0	46.2
> 6	9.6	10.9	13.3	16.0
> 7	1.4	2.0	3.0	4.2
> 8	0.2	0.3	0.7	1.0
> 9	0.0	0.0	0.2	0.3
> 10	0.0	0.0	0.1	0.1
> 11	0.0	0.0	0.0	0.0
> 12	0.0	0.0	0.0	0.0

Soybeans

(probabilities in percent; prices in U.S. dollars a bushel)

Threshold Prices	Months Forward			
	3	6	9	12
< 5	0.0	0.4	0.6	0.9
< 6	0.2	4.5	5.6	6.7
< 7	5.6	18.9	20.7	22.5
< 8	31.5	43.2	44.1	45.7
< 9	68.8	67.5	67.0	67.7
> 10	8.7	15.5	16.7	16.6
> 11	1.6	6.4	7.4	7.6
> 12	0.2	2.4	3.0	3.2
> 13	0.0	0.8	1.1	1.3
> 14	0.0	0.3	0.4	0.5
> 15	0.0	0.1	0.1	0.2

Soybean Meal

(probabilities in percent; prices in U.S. dollars a short ton)

Threshold Prices	Months Forward			
	3	6	9	12
< 100	0.0	0.0	0.0	0.0
< 150	0.1	0.1	0.2	0.4
< 200	4.2	5.4	6.7	8.3
< 250	28.9	31.1	33.0	35.3
> 300	34.4	33.9	33.7	32.9
> 350	11.3	11.8	12.6	12.8
> 400	2.8	3.2	3.8	4.1
> 450	0.6	0.7	1.0	1.2
> 500	0.1	0.2	0.2	0.3
> 550	0.0	0.0	0.1	0.1
> 600	0.0	0.0	0.0	0.0

Options-based Probabilities of Price Changes

(in percent)

WTI Crude Oil

Price changes	Months Forward			
	3	6	9	12
-50%	0.1	0.4	0.3	0.4
-30%	2.5	7.2	8.3	9.0
-10%	22.5	29.9	35.9	35.5
+10%	27.2	34.8	32.4	34.4
+30%	3.9	10.9	12.7	14.8
+50%	0.5	2.6	4.3	5.5
+100%	0.0	0.1	0.2	0.3

Brent Crude Oil

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.1	0.6
-30%	1.6	2.8	5.0	9.6
-10%	16.5	25.1	30.8	34.3
+10%	32.0	37.6	34.2	37.7
+30%	4.6	12.7	12.2	18.0
+50%	0.6	3.3	3.5	7.7
+100%	0.0	0.1	0.1	0.7

U.S. Natural Gas

Price changes	Months Forward			
	3	6	9	12
-50%	1.1	0.3	0.5	0.7
-30%	14.3	9.1	10.2	10.6
-10%	44.3	38.8	37.9	36.9
+10%	27.6	29.0	32.2	34.8
+30%	11.3	10.5	13.5	16.0
+50%	4.1	3.2	5.0	6.5
+100%	0.3	0.1	0.3	0.5

Gasoline

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.1	1.1
-30%	2.6	1.2	4.1	13.7
-10%	32.2	16.7	26.0	44.3
+10%	20.3	47.4	40.8	26.1
+30%	3.1	17.8	16.8	9.8
+50%	0.4	4.9	5.7	3.3
+100%	0.0	0.1	0.2	0.2

Copper

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	12.8	13.9	14.7
-30%	0.6	38.1	39.3	40.2
-10%	16.4	62.6	63.3	63.8
+10%	15.2	20.6	20.4	20.3
+30%	1.1	10.9	10.9	10.9
+50%	0.1	5.6	5.7	5.8
+100%	0.0	1.1	1.1	1.2

Gold

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.0	0.0
-30%	0.1	0.2	0.7	2.4
-10%	7.8	23.7	28.4	33.1
+10%	6.5	16.1	17.9	21.3
+30%	0.2	0.8	1.5	3.4
+50%	0.0	0.0	0.1	0.3
+100%	0.0	0.0	0.0	0.0

Options-based Probabilities of Price Changes (concluded)

(in percent)

Corn

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.0	0.1
-30%	2.4	3.1	4.3	4.0
-10%	28.5	28.8	30.1	28.6
+10%	28.7	31.3	33.2	34.7
+30%	6.7	8.7	10.9	11.7
+50%	1.1	1.8	2.8	3.1
+100%	0.0	0.0	0.1	0.1

Coffee

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.2	0.8	1.0
-30%	2.3	3.9	7.2	8.7
-10%	22.3	30.4	34.0	35.5
+10%	24.7	29.5	30.4	31.2
+30%	4.4	8.0	10.2	11.5
+50%	1.0	1.7	3.1	3.9
+100%	0.0	0.1	0.3	0.4

Rough Rice

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.0	0.1
-30%	0.1	0.7	4.7	6.4
-10%	14.8	18.7	32.3	35.0
+10%	30.9	35.4	30.4	30.1
+30%	3.7	7.7	9.3	10.0
+50%	0.2	1.0	2.2	2.7
+100%	0.0	0.0	0.0	0.1

Wheat

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.4	0.7
-30%	2.8	3.8	4.9	5.7
-10%	32.3	33.7	32.3	30.7
+10%	24.2	25.4	28.3	31.7
+30%	4.8	5.9	7.7	9.8
+50%	0.6	1.0	1.7	2.5
+100%	0.0	0.0	0.1	0.1

Soybeans

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.1	0.1
-30%	0.3	4.9	6.1	7.2
-10%	23.7	37.5	38.6	40.4
+10%	17.3	22.8	23.7	23.4
+30%	1.0	5.1	6.1	6.3
+50%	0.0	0.8	1.2	1.3
+100%	0.0	0.0	0.0	0.0

Soybean Meal

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.1	0.1	0.3
-30%	5.4	6.8	8.2	10.0
-10%	38.5	40.4	42.0	44.0
+10%	22.3	22.4	22.8	22.6
+30%	5.0	5.6	6.2	6.6
+50%	0.8	1.1	1.4	1.6
+100%	0.0	0.0	0.0	0.0

Commodity Derivative Contract Specifications

Commodity	Exchange	Contract	Physical Characteristics	Contract Size	Pricing Unit	Months Traded
Brent crude oil	ICE Europe	Futures	Light sweet crude oil	1,000 barrels	U.S. dollars per barrel	Consecutive months up to and including February 2020
		Options		One crude oil futures contract of 1,000 barrels		
WTI crude oil	New York Mercantile Exchange	Futures	Light sweet crude oil	1,000 barrels	U.S. dollars per barrel	Consecutive months are listed for the current year and the next five years; in addition, the Jun and Dec contract months are listed beyond the sixth year.
		Options		One crude oil futures contract of 1,000 barrels		
Natural Gas	New York Mercantile Exchange	Futures	Natural gas delivered at Henry Hub, LA	10,000 MMBtu	U.S. dollars per MMBtu	Consecutive months for the current year plus the next twelve full calendar years.
		Options		One natural gas futures contract of 10,000 MMBtu		
Gasoline	New York Mercantile Exchange	Futures	New York Harbor RBOB	42,000 gallons	U.S. cents per gallon	Consecutive months for 36 months
		Options		One gasoline futures contract of 42,000 gallons		
Gold	Chicago Mercantile Exchange	Futures	Gold (a minimum of 995 fineness)	100 troy ounces	U.S. dollars per troy ounce	Current calendar month; the next two calendar months; any Feb, Apr, Aug, and Oct falling within a 23-month period; and any Jun and Dec falling within a 72-month period beginning with the current month.
		Options		One COMEX Gold futures contract		
Corn	Chicago Mercantile Exchange	Futures	Yellow corn grade #2	5,000 bushels (127 MT)	U.S. cents per bushel	Mar, May, Jul, Sep, Dec. The monthly option contract exercises into the nearby futures contract.
		Options		One corn futures contract (of a specified month) of 5,000 bushels		
Coffee	ICE	Futures	Arabica coffee from 19 countries of origin	37,500 lbs	U.S. cents per pound	Mar, May, Jul, Sep, Dec. The monthly option contract exercises into the nearby futures contract.
		Options		One coffee futures contract (of a specified month) of 37,500 lbs		
Rough rice	Chicago Mercantile Exchange	Futures	U.S. #2 long grain rough rice with a total milling yield of 65%+	2,000 hundredweights (CWT)	U.S. cents per hundredweight	Jan, Mar, May, Jul, Sep, Nov. The monthly option contract exercises into the nearby futures contract.
		Options		One rough rice futures contract of 2,000 hundredweights (CWT)		
Wheat	Chicago Mercantile Exchange	Futures	#2 soft red winter wheat	5,000 bushels (136 MT)	U.S. cents per bushel	Mar, May, July, Sep, Dec. The monthly option contract exercises into the nearby futures contract.
		Options		One Wheat futures contract (of a specified month) of 5,000 bushels		
Soybean meal	Chicago Mercantile Exchange	Futures	Meal with minimum protein of 48%	100 short tons	U.S. dollars per ton	Jan, Mar, May, Jul, Aug, Sep, Oct, Dec. The monthly option contract exercises into the nearby futures contract.
		Options		One soybean meal futures contract (of a specified month) of 100 short tons		
Soybeans	Chicago Mercantile Exchange	Futures	Yellow soybean grade #2	5,000 bushels (136 MT)	U.S. cents per bushel	Jan, Mar, May, Jul, Aug, Sep, Nov. The monthly option contract exercises into the nearby futures contract.
		Options		One soybean futures contract (of a specified month) of 5,000 bushels		

Sources: Chicago Board of Trade, ICE, Bloomberg, L.P.



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