

Commodity Price Outlook & Risks

Research Department, Commodities Team¹



June 20, 2014

www.imf.org/commodities

commodities@imf.org

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

Outlook. Futures markets show most commodity prices declining or remaining flat over the next 12 months, with the exception of food items, such as wheat, coffee and corn. Natural gas prices are expected to rise through the coming winter and decline thereafter, reflecting seasonal demand patterns. Other fuel price prospects are downward-trending owing to ample supplies. Gold prices are expected to rise through the end of the year and decline marginally in 2015. Copper futures prices are flat amid stable demand. Wheat and corn prices are expected to increase by 11 percent and 6 percent, respectively, in the next year owing to concerns that excessive rainfall will hurt yields in the key growing areas of the U.S. Similarly, coffee prices are expected to rise by 6 percent over the next 12 months amid uncertainty about Brazil's crop.

Risks. The likelihood of per-barrel prices for WTI falling below \$90 and Brent below \$100 in the next 12 months is about 30 percent and 26 percent, respectively, which is lower than a month ago, especially for Brent. The likelihood of WTI prices falling below \$60 has dropped since May, while the probability of WTI prices rising above \$140 edged higher, indicating an upward shift in the overall WTI balance of risks. Similarly, the distribution of Brent price risks shifted upwards since last month amid escalating geopolitical tensions.

The likelihood of per-MMBtu U.S. natural gas prices falling below \$3 (12 months forward) has risen to 7.8 percent from 6.5 percent, while the probability of prices rising above \$7 dropped to 0.8 percent from 1.1 percent since May, as temperatures rose across the country. Copper price tail risks (12 months forward) spread on the downside, while the gold balance of risks shrunk on both ends of the price distribution since last month. The distributions of risks for both metals remain broadly balanced.

The likelihood of per-bushel wheat prices falling below \$4 rose to 1.6 percent from 0.7 percent, while the likelihood of prices rising above \$12 slipped to 0.2 percent from 1 percent in May, reflecting reduced uncertainty about the approaching winter-wheat harvest in Ukraine, with no reported disruptions. Similarly, the balance of corn price risks shifted to the downside since last month amid lower uncertainty over planting conditions in the U.S.

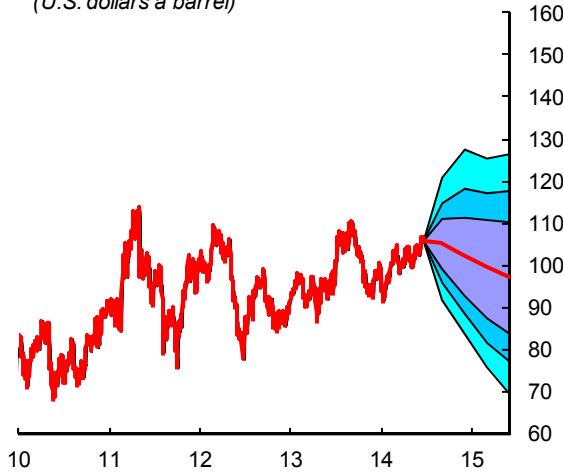
Contents. Fan charts (pages 2-3) show historical and forward futures prices (red line), with calculated confidence intervals of ± 2 standard deviations (in purple/blue). Confidence intervals are derived from prices of options on June 12, 2014. Likelihoods of spot prices rising/falling from specified 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).

¹ Prepared by Marina Rousset and Daniel Rivera Greenwood, with assistance from Akito Matsumoto.

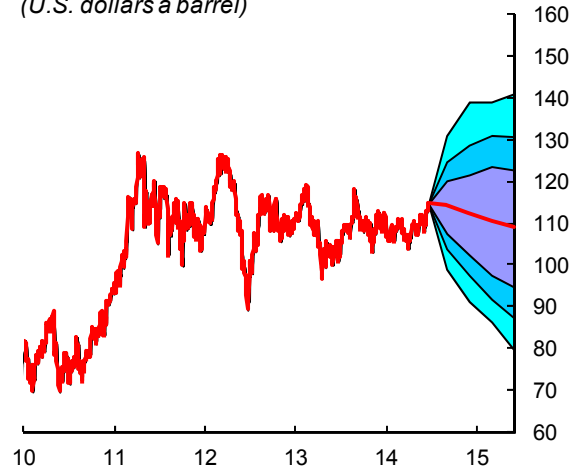
Selected Commodities—Market Price Outlook and Risks

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

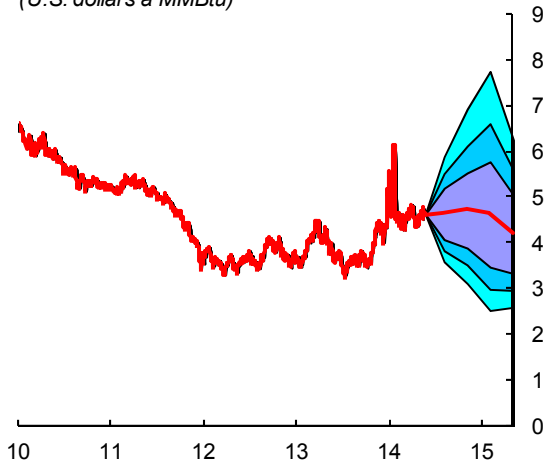
WTI Crude Oil
(U.S. dollars a barrel)



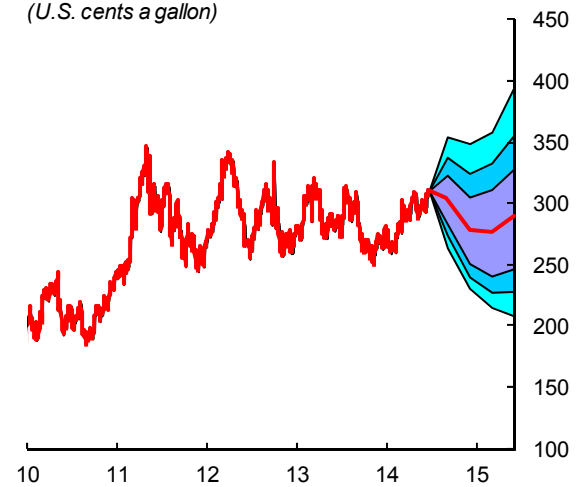
Brent Crude Oil
(U.S. dollars a barrel)



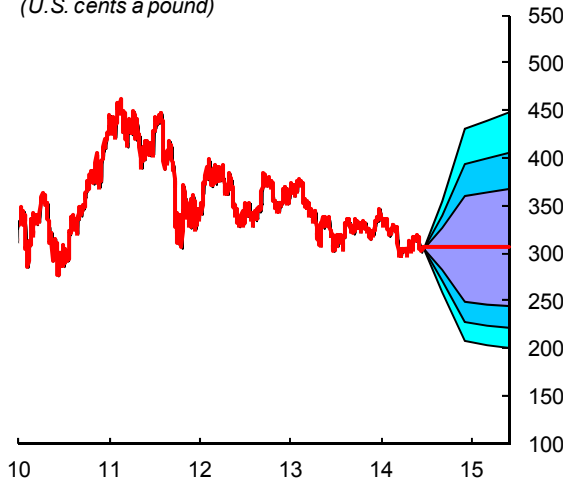
Natural Gas
(U.S. dollars a MMBtu)



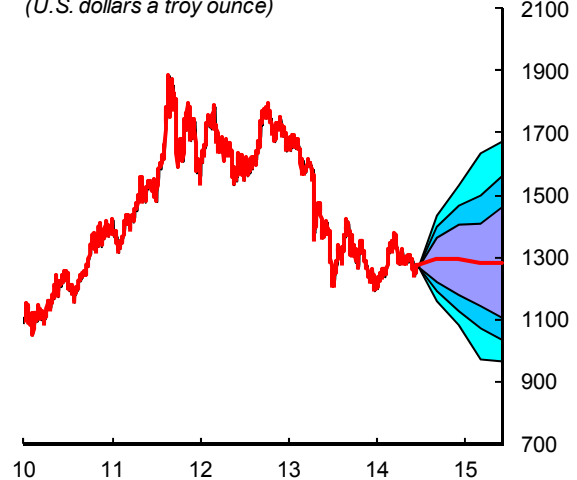
Gasoline
(U.S. cents a gallon)



Copper
(U.S. cents a pound)

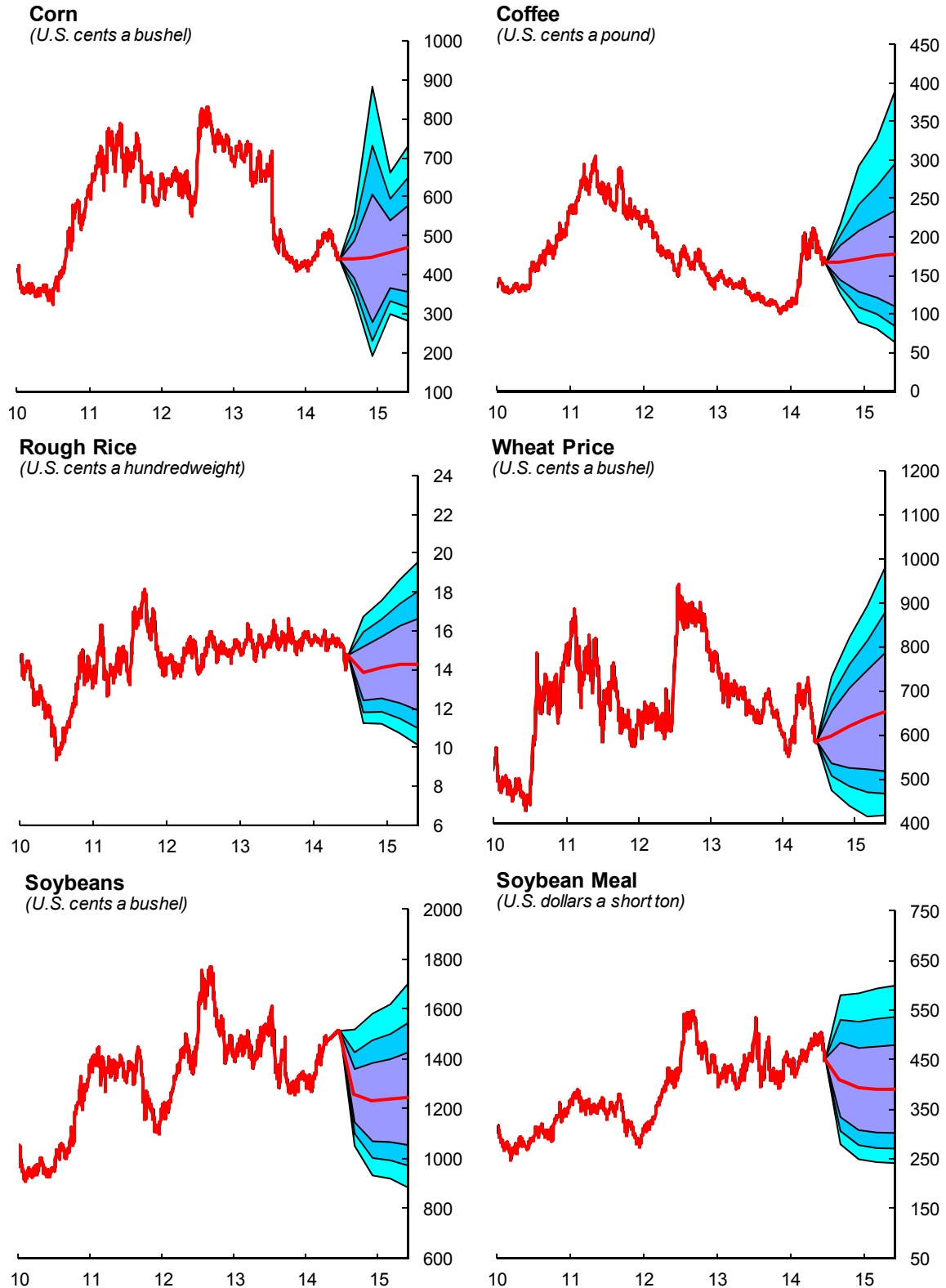


Gold
(U.S. dollars a troy ounce)



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
< 60	0.0	0.0	0.1	0.6
< 70	0.0	0.1	0.7	2.7
< 80	0.1	1.1	5.3	10.0
< 90	1.7	9.2	21.6	30.2
< 100	18.7	43.5	52.1	59.4
> 110	20.4	18.9	18.1	16.8
> 120	3.0	5.9	5.1	5.6
> 130	0.6	1.9	1.5	1.7
> 140	0.1	0.6	0.6	0.5
> 150	0.0	0.2	0.3	0.2
> 160	0.0	0.0	0.1	0.1

Brent Crude Oil

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

Threshold Prices	Months Forward			
	3	6	9	12
< 60	0.0	0.0	0.0	0.0
< 70	0.0	0.0	0.1	0.4
< 80	0.0	0.3	0.6	2.6
< 90	0.2	2.1	5.0	9.6
< 100	3.1	10.7	21.7	26.4
> 110	73.2	56.3	49.5	46.1
> 120	16.7	19.5	22.9	20.9
> 130	3.1	6.3	8.2	7.8
> 140	0.5	2.3	2.2	2.8
> 150	0.1	0.8	0.5	1.2
> 160	0.0	0.3	0.1	0.6

U.S. Natural Gas

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

Threshold Prices	Months Forward			
	3	6	9	12
< 2.50	0.0	0.3	2.4	1.9
< 3.00	0.1	1.8	7.2	7.8
< 3.50	1.7	6.7	16.6	22.0
> 4.00	87.2	80.4	68.4	55.8
> 4.50	56.6	56.9	49.9	32.8
> 5.00	24.3	33.0	33.2	16.9
> 5.50	7.3	16.8	20.8	8.0
> 6.00	1.8	8.3	12.7	3.6
> 6.50	0.4	4.3	7.8	1.7
> 7.00	0.1	2.3	4.9	0.8
> 7.50	0.0	1.2	3.1	0.4

Gasoline

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

Threshold Prices	Months Forward			
	3	6	9	12
< 1.50	0.0	0.0	0.0	0.1
< 1.75	0.0	0.0	0.0	0.4
< 2.00	0.0	0.0	0.4	1.5
< 2.25	0.0	1.2	5.8	5.9
< 2.50	0.5	14.9	24.0	18.1
> 2.75	93.0	50.0	48.7	60.0
> 3.00	54.0	20.2	24.4	35.9
> 3.25	14.7	7.1	9.9	18.3
> 3.50	3.5	2.5	3.6	8.7
> 3.75	0.6	0.8	1.3	4.3
> 4.00	0.1	0.2	0.5	2.3

Copper

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

Threshold Prices	Months Forward			
	3	6	9	12
< 1.5	0.0	0.0	0.0	0.0
< 2.0	0.0	1.4	1.9	2.3
< 2.5	1.1	16.4	17.8	18.4
< 3.0	41.3	49.8	49.9	49.3
> 3.5	3.7	20.4	21.5	22.9
> 4.0	0.1	6.2	7.2	8.3
> 4.5	0.0	1.5	2.0	2.5
> 5.0	0.0	0.3	0.5	0.7
> 5.5	0.0	0.1	0.1	0.2
> 6.0	0.0	0.0	0.0	0.0
> 6.5	0.0	0.0	0.0	0.0

Gold

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

Threshold Prices	Months Forward			
	3	6	9	12
< 900	0.0	0.0	1.0	0.7
< 1000	0.0	0.2	3.2	4.2
< 1100	0.1	3.6	9.3	14.7
< 1200	8.4	20.8	27.7	33.5
< 1300	53.9	53.7	57.9	55.7
> 1400	7.1	17.6	18.0	25.0
> 1500	0.3	4.6	7.3	12.5
> 1600	0.0	0.8	3.3	5.4
> 1700	0.0	0.1	1.7	2.1
> 1800	0.0	0.0	0.9	0.7
> 1900	0.0	0.0	0.4	0.2

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	0.0	9.9	0.4	0.7
< 3.0	0.2	20.7	2.5	4.3
< 3.5	3.1	33.7	10.8	14.1
< 4.0	20.0	46.6	28.4	29.5
> 4.5	40.2	41.4	48.3	52.2
> 5.0	12.2	31.2	27.8	35.2
> 5.5	3.2	23.1	14.1	22.0
> 6.0	0.7	16.9	6.7	12.9
> 6.5	0.1	12.2	3.1	7.2
> 7.0	0.0	8.8	1.5	3.9
> 7.5	0.0	6.3	0.8	2.0

Coffee

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

Threshold Prices	Months Forward			
	3	6	9	12
< 1.0	0.0	4.3	6.7	11.7
< 1.2	0.8	10.7	14.6	20.6
< 1.4	10.4	23.4	27.4	33.2
< 1.6	39.2	43.7	44.8	47.6
< 1.8	71.7	64.4	61.7	60.9
> 2.0	8.8	20.5	25.2	28.1
> 2.2	2.0	12.0	16.6	20.2
> 2.4	0.4	7.5	11.3	14.9
> 2.6	0.1	4.9	7.9	11.2
> 2.8	0.0	3.2	5.6	8.5
> 3.0	0.0	2.1	4.0	6.7

Rough Rice

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

Threshold Prices	Months Forward			
	3	6	9	12
< 0.10	0.1	0.2	0.7	2.1
< 0.11	1.4	1.7	3.7	7.1
< 0.12	9.2	8.6	12.2	17.1
< 0.13	29.4	25.3	27.6	31.8
> 0.14	42.5	50.5	52.7	51.3
> 0.15	19.8	28.4	34.3	35.8
> 0.16	6.9	12.8	19.4	22.7
> 0.17	1.9	4.8	9.8	13.3
> 0.18	0.4	1.6	4.4	7.3
> 0.19	0.1	0.5	1.8	3.8
> 0.20	0.0	0.1	0.7	1.9

Wheat

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

Threshold Prices	Months Forward			
	3	6	9	12
< 4	0.1	0.8	1.8	1.6
< 5	5.5	9.8	11.3	12.2
< 6	54.8	44.1	39.2	38.7
> 7	5.6	18.1	27.3	32.7
> 8	0.5	3.7	8.6	14.6
> 9	0.0	0.7	2.3	5.8
> 10	0.0	0.1	0.6	2.1
> 11	0.0	0.0	0.2	0.7
> 12	0.0	0.0	0.1	0.2
> 13	0.0	0.0	0.0	0.1
> 14	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
< 8	0.0	0.4	0.6	1.1
< 9	0.1	1.4	1.8	2.9
< 10	0.7	6.6	7.4	9.1
< 11	6.8	21.5	21.9	23.3
< 12	31.3	44.7	43.9	43.4
> 13	32.0	31.1	32.9	35.5
> 14	10.0	14.4	16.2	19.4
> 15	3.2	5.9	7.3	10.0
> 16	1.2	2.2	3.0	4.9
> 17	0.5	0.9	1.4	2.6
> 18	0.2	0.5	0.7	1.6

Soybean Meal

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

Threshold Prices	Months Forward			
	3	6	9	12
< 200	0.0	0.1	0.2	0.3
< 250	0.5	2.4	3.1	3.3
< 300	5.4	12.8	14.5	14.8
< 350	21.9	33.7	35.2	35.2
< 400	47.8	57.8	58.3	57.9
> 450	28.2	22.9	23.4	24.0
> 500	12.6	11.0	11.7	12.2
> 550	4.9	4.8	5.4	5.8
> 600	1.7	1.9	2.3	2.6
> 650	0.5	0.7	1.0	1.1
> 700	0.2	0.3	0.4	0.4

Options-based Probabilities of Price Changes (in percent)

WTI Crude Oil

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.0	0.2
-30%	0.0	0.3	1.7	4.7
-10%	5.8	24.2	36.8	45.8
+10%	5.1	8.4	7.7	8.1
+30%	0.1	0.8	0.8	0.7
+50%	0.0	0.0	0.1	0.1
+100%	0.0	0.0	0.0	0.0

Brent Crude Oil

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.0	0.0
-30%	0.0	0.3	0.6	2.6
-10%	5.3	16.3	28.4	32.8
+10%	6.2	10.1	13.3	12.2
+30%	0.1	1.0	0.7	1.4
+50%	0.0	0.1	0.0	0.3
+100%	0.0	0.0	0.0	0.0

U.S. Natural Gas

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.1	1.5	1.0
-30%	0.5	3.8	11.5	14.2
-10%	22.5	27.8	38.6	53.6
+10%	18.9	28.4	29.9	14.3
+30%	1.5	7.7	12.0	3.3
+50%	0.1	2.3	4.9	0.8
+100%	0.0	0.1	0.7	0.0

Gasoline

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.0	0.1
-30%	0.0	0.4	2.8	3.8
-10%	10.1	55.7	55.5	43.9
+10%	6.2	3.7	5.3	11.5
+30%	0.1	0.2	0.4	2.1
+50%	0.0	0.0	0.0	0.5
+100%	0.0	0.0	0.0	0.0

Copper

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.0	0.1
-30%	0.0	3.5	4.4	4.9
-10%	9.1	32.2	33.2	33.3
+10%	9.1	27.0	28.0	29.3
+30%	0.1	6.5	7.6	8.7
+50%	0.0	1.1	1.5	2.0
+100%	0.0	0.0	0.0	0.0

Gold

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.0	0.0
-30%	0.0	0.0	0.9	0.5
-10%	1.3	9.0	15.6	22.4
+10%	7.7	18.3	18.5	25.6
+30%	0.0	0.3	2.3	3.2
+50%	0.0	0.0	0.4	0.2
+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	5.5	0.1	0.1
-30%	0.3	22.9	3.3	5.6
-10%	18.7	46.0	27.4	28.7
+10%	17.7	33.9	33.1	39.8
+30%	1.5	19.8	9.8	17.0
+50%	0.1	11.3	2.6	6.2
+100%	0.0	2.6	0.2	0.3

Coffee

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	1.5	2.7	6.5
-30%	0.5	9.4	13.1	19.0
-10%	22.7	32.9	35.8	40.3
+10%	23.4	32.2	35.5	36.8
+30%	2.6	13.1	17.7	21.4
+50%	0.1	6.0	9.4	12.8
+100%	0.0	1.1	2.3	4.6

Rough Rice

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.0	0.0
-30%	0.3	0.4	1.3	3.3
-10%	36.9	31.6	32.8	36.4
+10%	4.9	10.0	16.2	19.7
+30%	0.0	0.3	1.5	3.2
+50%	0.0	0.0	0.1	0.4
+100%	0.0	0.0	0.0	0.0

Wheat

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.1	0.0
-30%	0.2	1.1	2.2	2.0
-10%	12.9	16.6	17.2	18.3
+10%	19.9	36.5	44.7	47.5
+30%	1.3	6.9	13.7	20.0
+50%	0.1	0.9	3.0	7.0
+100%	0.0	0.0	0.1	0.3

Soybeans

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.1	0.2	0.4
-30%	0.5	5.6	6.3	8.0
-10%	57.6	62.1	60.5	58.5
+10%	1.9	3.6	4.6	6.9
+30%	0.1	0.4	0.6	1.3
+50%	0.0	0.1	0.2	0.5
+100%	0.0	0.0	0.0	0.0

Soybean Meal

Price changes	Months Forward			
	3	6	9	12
-50%	0.1	0.7	1.1	1.2
-30%	9.7	19.2	21.0	21.2
-10%	51.9	61.3	61.6	61.1
+10%	12.8	11.2	11.9	12.4
+30%	2.1	2.4	2.8	3.1
+50%	0.3	0.4	0.6	0.6
+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.



INTERNATIONAL MONETARY FUND

Washington, D.C. 20431 • Telephone 202-623-7100 • Fax 202-623-6772 • www.imf.org