

Commodity Market Monthly

Research Department, Commodities Unit

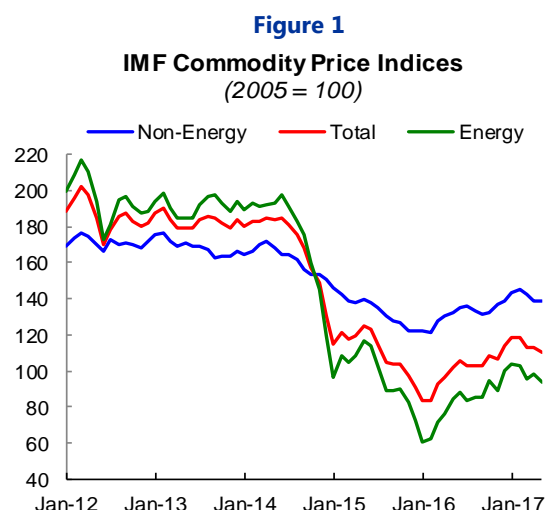


June 9, 2017¹

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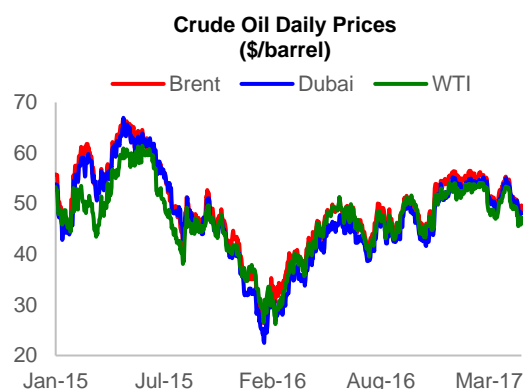
Commodity prices fell 2.3 percent in May 2017 (Figure 1). This decrease was largely driven by the decline in the energy and metal price indices, which fell 4.5 percent and 3.9 percent respectively. This offset the 3.5 percent increase in the food and beverage index.



Energy

Monthly average crude oil prices decreased 4.4 percent in May to \$49.91 per barrel (bbl). During the month of May (from the end of April to the end of May), Average Petroleum Spot Price (simple average of U.K. Brent, Dubai Fateh, and West Texas Intermediate; APSP) decreased 1.7 percent. (Figure 2). Since then, it has declined further in response to massive build-ups of the U.S. petroleum inventories.

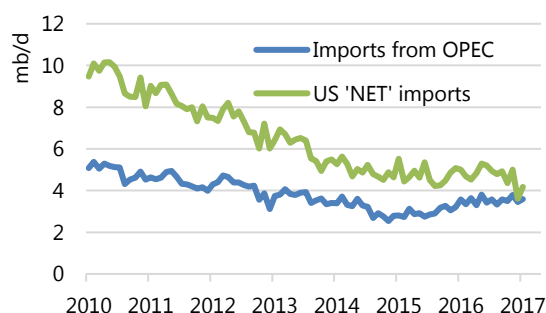
Figure 2



Oil prices rebounded in the middle of May as the market priced in the extension of OPEC production cut through March 2018. The extension beyond the end of this year was a surprise. However, oil prices have since decreased amid continued U.S. supply growth and strong export from OPEC to the U.S. despite weak import demand in the U.S. (Figure 3).

Figure 3

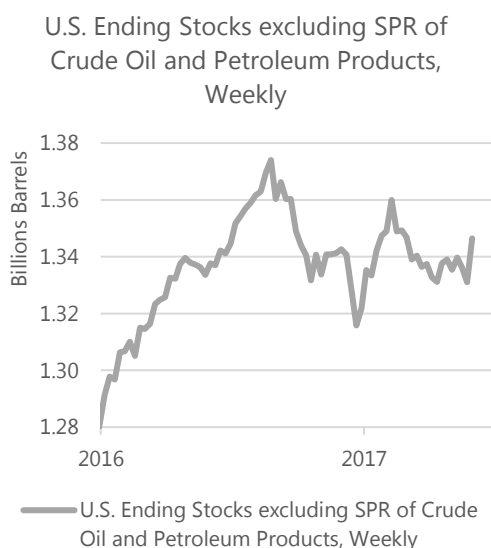
U.S. Imports of Crude Oil and Petroleum Products



¹ Fan charts are based on the closing price of June 5, 2017.

The resolution of outage in Canada and Libya also adds more supply. The U.S. Energy Information Administration has revised its supply forecast for 2017 again in its June 6 report. It expects that the U.S. crude oil production will reach 10 million barrels per day (mb/d). The U.S. data indicates little sign of rebalancing as massive commercial inventories built up right after the Memorial Day weekend. (Figure 4)

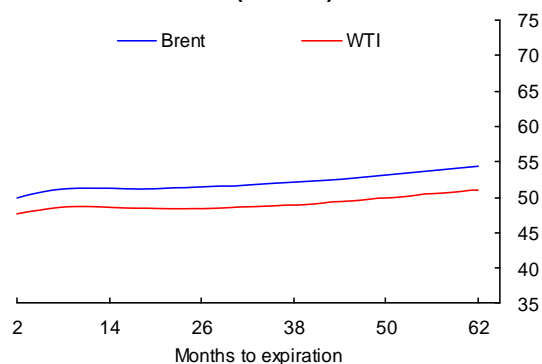
Figure 4
U.S. Ending Stocks excluding SPR of Crude Oil and Petroleum Products, Weekly



Source: The U.S. Energy Information Administration

Futures contracts point to oil prices (APSP) staying almost flat at \$49.67 in 2017 (compared to the current IMF baseline of \$51.92) and \$49.29 in 2018 (compared to current IMF baseline of \$52.00). Future curves are very gradually increasing for the next 5 years. (Figure 5.)

Figure 5
Day's Oil Future Curves (\$/barrel)



Average monthly natural gas prices at Henry Hub in the U.S. increased by 1.4 percent to an average of \$3.12 per million British thermal units (MMBtu) in May from an average of \$3.08/MMBtu in April. Daily prices decreased 5.4 percent to \$3.00 at the end of May from \$3.17 at the end of April. In Europe, average monthly natural gas prices (converted to USD) at the Title Transfer Facility (TTF Netherland), our new benchmark for natural gas prices in Europe, have increased by 0.6 percent to \$5.07/MMBtu in May although from the end of April to the end of May, TTF prices decreased 4.6 percent. Average monthly natural gas prices in Asia, which are derived from LNG benchmark prices (Source: Argus Media Group) in North East Asia, are almost unchanged in May (+0.2%).

Coal prices in Australia have decreased by 11.1 percent in May. Coal prices in South Africa decreased by 6.2 percent as recent Chinese economic data show a slowdown in commodity demand.

Box
Dispute of Qatar and GCC countries

Four countries cut diplomatic ties with Qatar

The governments of Saudi Arabia, Bahrain, the United Arab Emirates, and Egypt announced that they will suspend air and sea travel to and from Qatar because of its alleged support of "terrorist groups aiming to destabilize the region," including the Muslim Brotherhood, Islamic State and al-Qaeda. Qatar admits support for some Islamist movements, such as the Muslim Brotherhood (political organization calling for a society based on Islamic law) and Hamas (the militant Palestinian group), but denies backing terrorism. The action was unexpected and it is unclear how long it will last.

Background of dispute

The dispute intensified in late May when the official Qatar News Agency ran a report quoting the Emir of Qatar making favorable comments about Iran and criticizing President Trump's hardline policy towards Tehran. While Qatar said the news agency had been hacked, and that the report quoting the emir was "fake news," some of Qatar's neighbors did not buy that explanation and blocked its media, including Al Jazeera.

Qatar has been relatively independent among Gulf Cooperation Council pursuing its own agenda as its relationship with Iran is complex. It shares the largest gas field in the world, South Pars, with Iran. Thanks to that field, the tiny state has become the world's leading exporter of LNG. Relations between Qatar and other Gulf states cooled in 2014 over Qatar's foreign policy and its links to the Muslim Brotherhood.

Impact on energy market

Geopolitical tension in the region supports energy prices in general, given the possibility of disruptions in production and transportation of natural gas or crude oil. However, such a disruption is unlikely in this case. Qatar is the largest exporter of LNG and many Asian countries rely on its export.

In the short run, LNG cargo from Qatar to Egypt and the United Arab Emirates (UAE) can be diverted elsewhere, thus Egypt and UAE would need to find alternative suppliers. In theory, this would not have a significant impact as both sides have alternatives, but given the low demand in Middle East, it may have a slight downward pressure on the Northeast Asia spot LNG market where Qatar cargoes are expected to divert.

Metals

The IMF base metal index, comprised of 8 base metals (Table 1), fell 3.9 percent in May. Most base metals fell in May, with iron ore leading the group with the steepest decline (-13.5%). Nickel and lead also fell significantly, by 4.9 and 4.6 percent respectively. Tin was the exception (+1.5%), while aluminum was relatively stable (-0.3%).

The recent fall in metal prices can be attributed to China's efforts to rein in its shadow banking sector. Much credit from off-balance sheet lending has gone to the metal sector through wealth management products. With the tightening of credit, China's economy and its metal demand have been slowing. Its Manufacturing Purchasing Managers' Index (PMI), which fell to 51.2 in April, held steady in May. While China's efforts to tighten credit in 2017 were widely expected, the regulatory measures introduced by the government were

more of a surprise. Last month, China's banking regulator issued rules mandating banks to be more transparent. These ongoing efforts are expected to continue sapping demand for metals in the second half of 2017.

In the US, President Trump has designated the week of June 5 as "Infrastructure Week", with a series of events hosted by the White House. However, it is unlikely to have any significant effects on metal market fundamentals given the relatively small presence of the US in metal markets.

Table 1
Current Base Metal Prices and % changes
(as of May 31, 2017)

Metal	Price (\$)	% change	
		Month-on-Month	Year-to-Date
Copper	5,658/MT	-1.5	2.4
Aluminum	1,926/MT	-0.3	13.0
Tin	20,435/MT	1.5	-3.6
Nickel	8,922/MT	-4.9	-10.5
Zinc	2,587/MT	-1.2	1.1
Lead	2,099/MT	-4.6	5.0
Iron Ore	58.0/MT	-13.5	-27.5
Uranium	19.8/lb	-7.3	-3.2

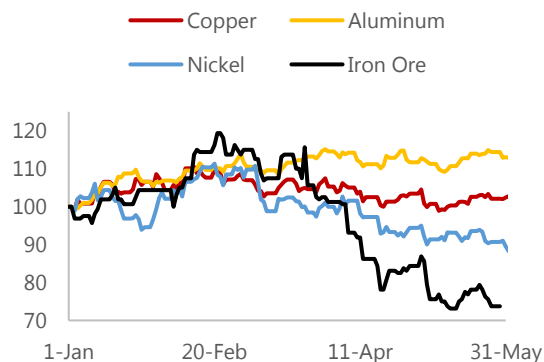
Sources: London Metal Exchange (Copper, aluminum, tin, nickel, zinc, and lead); DataStream CIF China United States (FE63.5%, iron ore); and New York Mercantile Exchange (uranium).

Iron ore prices have continued their downward trend, falling 27.5 percent year-to-date to reach \$58 per metric ton (MT). The market is contending with a stockpile of lower-grade iron ore in China, as the climbing steel prices lead manufacturers to use a higher-grade iron ore. Last Friday, iron ore prices briefly rebounded on news of a blaze at BHP Billiton's mine in Western Australia. One of the largest iron ore mines in the world, BHP's Mt Whaleback mine produced 43 million MT of iron ore last year. The market effect

of this production interruption is likely to be short-lived and limited. A total of 180 million MT of low-cost supply of iron ore is expected to reach the market in the next four years keeping prices low.

Figure 6

Select Metal Indices, 2017
(January 1 = 100)



Next to iron ore, nickel has been the worst performing industrial metal this year. Nickel prices fell 4.9 percent in May and 10.5 percent year-to-date, down to its lowest point in 11 months (\$8,922/MT). The recent downward trend in nickel prices is driven by increasing supply from Indonesia and the Philippines, which together accounted for almost 30 percent of global mine production in 2016. Indonesia has lifted its export ban on ores, granting licenses to PT Aneka Tambang and Freeport. The Philippines' environmental minister, who had been responsible for the recent spate of mine closures (affecting 10% of the global nickel supply), was fired early May.

Copper prices have increased 2.4 percent since January to reach \$5,658/MT. The ongoing strike at Freeport's Grasberg copper mine in Indonesia was extended beyond May 30 for a second month. This strike was in response to Freeport laying off 10 percent of its workers last month, to cut costs amid a contract dispute with the

Indonesian government. Ongoing supply disruptions adds support to prices. However, concerns about China's economy slowing puts downward pressure on prices.

Aluminum prices have outperformed other base metals in 2017, rising 13 percent since January to reach \$1,926/MT. The main driver behind this price surge has been expectations of lower supply. China's policy of reducing production capacity of aluminum has spurred its price increase. Most of the recent price increase occurred during the first quarter, with prices relatively stable in May.

Agriculture

In May 2017, the IMF price index of food, beverages and agricultural raw materials increased for the first time in four months by 2.0 percent, with strong gains in the index of food and beverages (+3.5%) partially offset by losses in the index of raw materials (-2.3%). Prices of agricultural commodities increased across the board, with strong gains for the indices of meat, seafood and cereals, which increased by 7.1, 6.7, and 4.2 percent respectively, and a more modest gain for the index of vegetable oils, which increased by 1.8 percent. As for individual commodities, the large gain for pork (+14.5%) is particularly noteworthy, while wheat (+5.8%), palm oil (+5.2%) and beef (+3.9%) also recorded substantial gains. Oranges (-10.9%), hides (-8.0%), sugar (-4.4%), and coffee (-3.0%) experienced substantial losses.

With the price of wheat increasing by 5.8 percent in May 2017, the price rally that started at the end of last year with cumulative gains of 19 percent between January and March 2017, maybe back on track. Following an early May snowstorm in the US that affected the Midwestern plain states, and a projection by the United States Department of Agriculture (USDA) on May 10, 2017 that US supply of wheat would fall by 9 percent year-on-

year in 2017/2018, prices jumped, but fell back somewhat later during the month as it became clear that the impact of the US snowstorm remained limited. While global supplies are expected to fall slightly to 737.8 million metric tons (mmt), the second highest level ever, global ending stocks are projected to increase to a record of 258 mmt, up almost 3 mmt from 2016/2017, on account of reduced feed use and weaker exports. Furthermore, as the cumulative net short in wheat held by hedge funds at the end of May continues to be the highest on record, further increases in prices are likely if risks of negative weather shocks in key producer countries were to materialize.

After falling almost 15 percent between February and April 2017, the price of palm oil increased for the first time in four months on account of stronger export demand in South-East Asia, increasing by 5.2 percent, month-on-month, in May 2017. Despite this month's price spike, the outlook for palm oil for the remainder of the year is bearish. After last year's El Niño induced crunch, output in top producing countries Indonesia and Malaysia is expected to increase, while demand for palm oil exhibits weaker growth due to the availability of other competitive vegetable oils. As of May 2017, Malaysian palm oil futures curves remain in backwardation, indicating that market participants expect supplies to grow in the near foreseeable future.

The price of beef increased by 3.9 percent in May 2017. This constitutes the fifth consecutive month of rising prices, and the total gain since December 2016 now stands at more than 15 percent. Lower cattle slaughter weight, resulting from higher-than-usual supply of cattle from feedlots in previous months is contributing to weaker growth of supply in the U.S. Meanwhile, demand for red meat has been stronger than expected. Indicative of this strong demand is that US exports increased by 70 percent week-on-week in the week ending May 25, 2017.

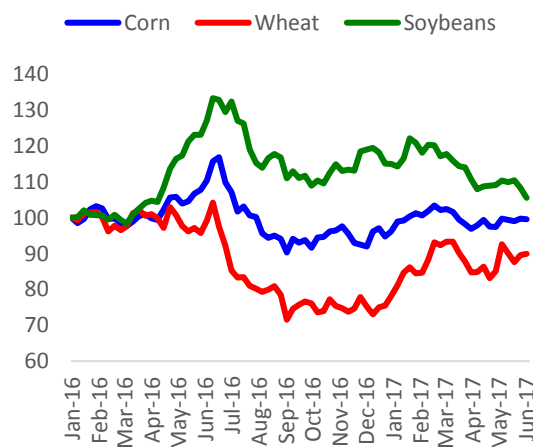
Lean hog prices increased by 14.5 percent in May 2017, the first increase in three months. The price

increase comes mostly on account of a strong seasonal demand in the run-up to the summer and strong export demand that is outpacing growing supply. In the medium run, new hog processing plants will put downward pressures on prices. In the long-run, market access to China, where modernization of the industry under influence of stricter environmental regulation is limiting growth, is key.

The price of Arabica coffee decreased by 3.0 percent in May 2017. This loss is mostly due to a weaker Brazilian Real. According to several observers, the outlook for coffee is mostly bullish. A global economic growth rate of 3.5 percent in 2017 suggests higher coffee consumption in emerging markets, especially in China. Demand has been stronger in more mature markets, including the European Union and Japan. On the supply side, Brazilian Arabica output is expected to decrease by 11 percent in 2017, from 51.4 million bags in 2016 to 45.6 million bags this year. It should be noted that this year's crop is the lower-yielding half of a regular 2-year harvest cycle.

The price of corn increased by 1.8 percent in May 2017. Weather during the next three summer months will be important in determining the yield of the upcoming US corn crop. In addition, as soybeans were outperforming corn before the 2017 planting season got underway, chances are that US farmers planted less corn and more soybean in 2017 compared to 2016. Recent USDA reports support this view. In the May WASDE, the USDA forecasted global corn ending stocks for the 2017/2018 season to decline by 28.6 mmt to 195 mmt. After four years of bumper crops, and with global demand for grains continuing to grow, the outlook for corn now appears to be more bullish.

**Figure 7. Corn, wheat and soybean prices
(January 1, 2016=100)**



Sources: United States Department of Agriculture (corn, wheat), Chicago Board of Trade (soybeans); staff calculations

Figure 8

**May Commodity Prices Changes
(percent from previous month)**

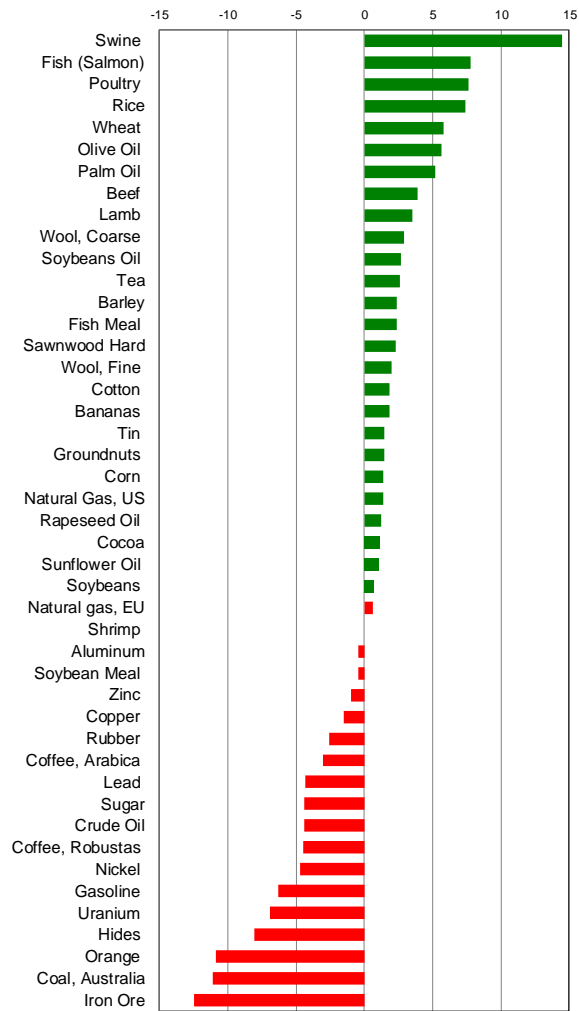


Table 1. Market Prices for Non-Fuel and Fuel Commodities

	Units	2014	2015	2016	2016Q2	2016Q3	2016Q4	2017Q1	Apr-17	May-17
Food										
Cereals										
Wheat	\$/MT	242.5	185.6	143.2	159.2	128.2	122.6	143.6	138.4	146.5
Maize	\$/MT	192.9	169.8	159.2	171.1	153.4	152.2	160.6	156.4	158.6
Rice	\$/MT	426.5	380.0	388.3	401.8	418.2	365.3	369.6	374.5	402.3
Barley	\$/MT	146.1	127.9	129.4	137.4	131.1	129.3	135.2	138.8	142.1
Vegetable oils and protein meals										
Soybeans	\$/MT	457.8	347.4	362.7	387.8	372.2	367.3	375.5	347.9	350.2
Soybean meal	\$/MT	467.0	352.7	350.2	392.9	370.0	342.9	364.3	342.6	341.0
Soybean oil	\$/MT	812.7	672.2	721.2	719.7	701.4	776.6	746.1	695.3	714.1
Palm oil	\$/MT	739.4	565.1	639.8	647.8	647.0	677.7	698.9	623.2	655.5
Fish meal	\$/MT	1921.5	1759.2	1418.5	1511.5	1409.7	1286.2	1139.7	1094.7	1120.5
Sunflower Oil	\$/MT	1080.3	1022.2	1009.7	1028.6	982.0	1003.7	961.5	940.0	949.8
Olive oil	\$/MT	3780.6	4292.8	3978.5	3897.5	3982.3	3948.3	4336.9	4389.0	4635.6
Groundnuts	\$/MT	2148.3	1946.2	1798.3	1855.4	1804.7	1711.8	1836.6	1848.0	1874.5
Rapeseed oil	\$/MT	904.4	774.6	822.0	797.7	810.6	904.7	876.5	823.0	833.5
Meat										
Beef	cts/lb	224.1	200.5	178.2	179.3	185.4	179.3	183.8	192.9	200.4
Lamb	cts/lb	130.6	107.9	106.9	100.6	110.8	120.8	124.7	134.5	139.3
Swine Meat	cts/lb	102.8	67.9	62.4	72.6	66.6	50.1	67.2	59.6	68.3
Poultry	cts/lb	110.1	114.7	111.5	111.8	110.9	111.1	117.6	130.7	140.6
Seafood										
Fish	\$/kg	6.6	5.3	7.1	7.3	7.2	7.5	7.9	7.4	8.0
Shrimp	\$/kg	16.6	14.1	11.0	10.6	10.7	11.8	12.1	12.1	12.1
Sugar										
Free market	cts/lb	17.1	13.2	18.5	17.6	20.8	20.9	19.6	16.4	15.7
United States	cts/lb	24.9	24.8	27.0	26.4	27.2	28.9	29.7	28.7	28.4
EU	cts/lb	27.4	25.4	22.5	23.9	21.8	20.7	20.6	21.0	21.5
Bananas	\$/MT	931.9	958.7	1002.4	993.0	1023.2	965.4	1029.8	1063.5	1083.1
Oranges	\$/MT	782.5	675.0	889.1	784.7	992.5	1093.1	919.6	849.4	756.8
Beverages										
Coffee										
Other milds	cts/lb	202.8	160.5	164.5	158.5	173.6	175.3	164.3	155.9	151.2
Robusta	cts/lb	105.6	94.2	94.3	90.4	98.5	106.1	110.5	106.2	101.5
Cocoa Beans	\$/MT	3062.8	3135.2	2892.0	3099.9	2987.9	2499.6	2097.4	1961.2	1983.2
Tea	cts/kg	237.9	340.4	287.4	251.4	284.7	323.4	369.2	362.1	371.5
Agricultural raw materials										
Timber										
Hardwood										
Logs 1/	\$/M3	282.0	246.0	274.4	275.7	290.7	272.8	261.8	270.3	265.3
Sawnwood 1/	\$/M3	897.9	833.3	738.9	782.3	716.2	676.8	674.9	688.4	704.5
Softwood										
Logs 1/	\$/M3	174.3	162.0	156.8	143.5	151.7	163.7	162.6	160.1	160.1
Sawnwood 1/	\$/M3	307.3	308.7	297.1	309.2	307.6	304.7	299.8	300.4	300.4
Cotton	cts/lb	83.1	70.4	74.2	71.2	79.7	79.0	84.8	87.0	88.6
Wool										
Fine	cts/kg	1074.4	1005.8	1112.0	1092.8	1140.3	1191.4	1371.0	1405.0	1433.2
Coarse	cts/kg	1034.6	927.8	1016.4	1009.0	1082.2	1015.1	1039.0	991.1	1020.0
Rubber	cts/lb	88.8	70.7	74.5	75.2	76.1	87.3	115.4	101.2	98.6
Hides	cts/lb	110.2	87.7	74.1	73.5	74.2	75.9	76.5	75.4	69.4

1/ Provisional.

2/ Average Petroleum Spot Price (APSP). Average of U.K. Brent, Dubai, and West Texas Intermediate, equally weighted.

Table 1. Market Prices for Non-Fuel and Fuel Commodities (Continued)

	Units	2014	2015	2016	2016Q2	2016Q3	2016Q4	2017Q1	Apr-17	May-17
Metals										
Copper	\$/MT	6863.4	5510.5	4867.9	4736.4	4779.6	5280.8	5840.0	5683.9	5599.6
Aluminum	\$/MT	1867.4	1664.7	1604.2	1571.8	1620.2	1710.3	1851.2	1921.2	1913.0
Iron Ore	\$/MT	97.4	56.1	58.6	56.4	58.6	70.8	85.6	70.4	61.6
Tin	\$/MT	21898.9	16066.6	17933.8	16902.1	18584.3	20810.1	20004.5	19910.3	20200.3
Nickel	\$/MT	16893.4	11862.6	9595.2	8822.5	10263.5	10787.0	10273.1	9609.3	9155.1
Zinc	\$/MT	2161.0	1931.7	2090.0	1916.9	2251.6	2514.2	2779.1	2614.9	2590.2
Lead	\$/MT	2095.5	1787.8	1866.7	1717.6	1872.7	2138.3	2278.3	2220.6	2125.1
Uranium	\$/lb	33.5	36.8	26.3	27.5	25.5	19.6	23.9	23.2	21.6
Energy										
Spot Crude 2/	\$/bbl	96.2	50.8	42.8	44.8	44.7	49.1	53.0	52.2	49.9
U.K. Brent	\$/bbl	98.9	52.4	44.0	46.0	45.8	50.1	54.1	53.1	50.9
Dubai	\$/bbl	96.7	51.2	41.2	42.9	43.4	47.9	52.9	52.4	50.3
West Texas Intermediate	\$/bbl	93.1	48.7	43.2	45.5	44.9	49.2	51.8	51.2	48.6
Natural Gas										
Russian in Germany	\$/mmbtu	10.5	7.3	4.4	4.0	4.2	4.6	5.8	5.0	5.1
Indonesian in Japan (LNG)	\$/mmbtu	17.0	11.0	7.4	6.9	7.4	7.4	7.4	5.7	5.7
US, domestic market	\$/mmbtu	4.4	2.6	2.5	2.1	2.8	3.0	3.0	3.1	3.1
Coal										
Australian, export markets	\$/MT	75.7	62.7	70.1	55.1	70.7	100.3	87.9	90.1	80.1

1/ Provisional.

2/ Average Petroleum Spot Price (APSP). Average of U.K. Brent, Dubai, and West Texas Intermediate, equally weighted.

Table 2. Indices of Market Prices for Non-Fuel and Fuel Commodities, 2014-2016

(2005=100, in terms of U.S. dollars) 1/

	(weights) 1/	2014	2015	2016	2016Q2	2016Q3	2016Q4	2017Q1	Apr-17	May-17
All Primary Commodities 2/	100.0	171.9	111.3	100.1	101.4	102.7	109.7	116.7	113.2	110.6
Non-Fuel Commodities	36.9	162.3	134.0	131.5	132.8	133.4	135.9	143.8	138.4	138.8
Agriculture	26.2	161.5	136.9	136.3	139.8	138.6	137.1	142.2	137.9	140.6
Food	16.7	170.1	140.8	143.8	149.2	145.9	143.9	150.6	145.2	151.0
Cereals	3.6	180.2	149.0	131.4	142.0	126.4	120.6	131.3	128.8	134.2
Vegetable oils and protein meals	4.4	190.5	152.8	155.9	163.8	158.6	158.0	161.3	150.8	153.5
Meat	3.7	160.5	137.4	126.6	131.4	130.9	121.9	133.3	137.5	147.2
Seafood	3.2	162.0	131.7	161.6	164.8	163.0	169.5	178.8	169.7	181.0
Beverages	1.8	178.0	172.6	163.9	163.5	169.8	163.8	156.0	148.7	147.1
Agricultural raw materials 3/	7.7	138.8	120.1	113.3	113.7	115.5	116.3	120.8	119.3	116.6
Timber	3.4	109.3	104.5	100.2	103.0	101.6	99.4	97.9	98.8	99.1
Metals	10.7	164.4	126.6	119.7	115.6	120.6	132.9	147.8	139.9	134.4
Edibles 4/	18.5	170.9	143.9	145.8	150.6	148.2	145.8	151.1	145.6	150.6
Industrial Inputs 5/	18.4	153.7	123.9	117.0	114.8	118.5	125.9	136.5	131.2	126.9
Energy 6/	63.1	177.5	98.0	81.7	83.0	84.7	94.4	100.8	98.4	94.0
Petroleum 7/	53.6	181.1	95.6	80.4	84.1	84.0	92.2	99.6	98.2	93.9
Natural Gas	6.9	159.9	106.8	70.0	64.1	69.3	73.1	82.3	70.5	70.9
Coal	2.6	150.7	123.5	138.4	110.6	139.8	195.0	174.3	175.5	157.7

1/ Weights based on 2002-2004 average world export earnings.

2/ Non-Fuel Primary Commodities and Energy Index.

3/ Includes Forestry Products.

4/ Edibles comprised of Food and Beverages

5/ Industrial (Non-Fuel) Inputs comprised of Agriculture and Metals

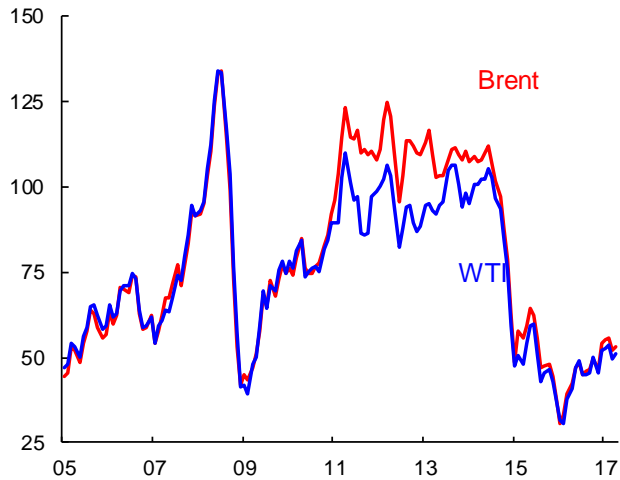
6/ Includes Petroleum, Natural Gas and Coal

7/ Average Petroleum Spot Price (APSP). Average of U.K. Brent, Dubai, and West Texas Intermediate, equally weighted.

Commodity Prices Movements

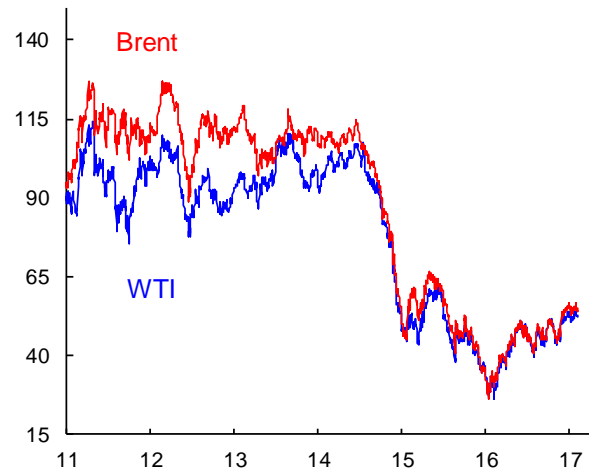
Monthly (from 2005)

Crude oil (\$/bbl)

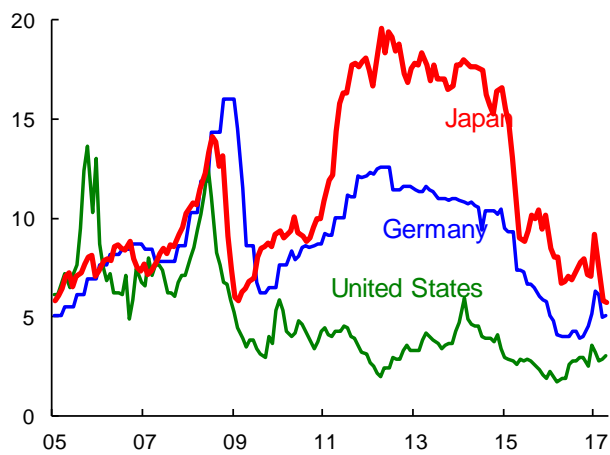


Daily (from 2011)

Crude oil (\$/bbl)

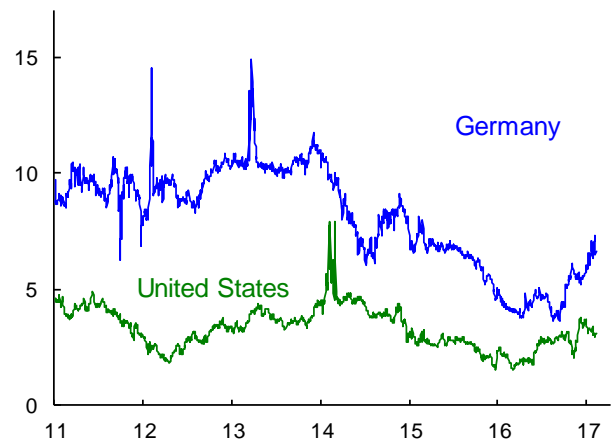


Natural Gas (\$/mmbtu)



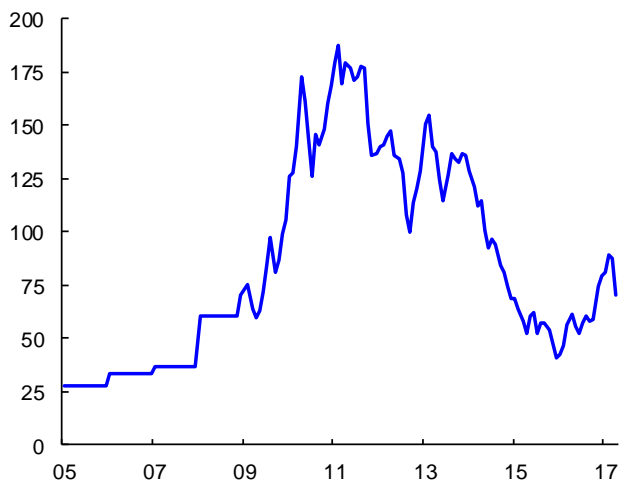
Sources: Energy Intelligence; Bloomberg, L.P.

Natural Gas (\$/mmbtu)



Source: Bloomberg, L.P.

Iron Ore (\$/ton)



Iron Ore (\$/ton)



Commodity Prices Movements (Continued)

Monthly (from 2005)

Copper (\$/ton)



Daily (from 2011)

Copper (\$/ton)



Aluminium (\$/ton)



Aluminium (\$/ton)



Nickel (\$/ton)



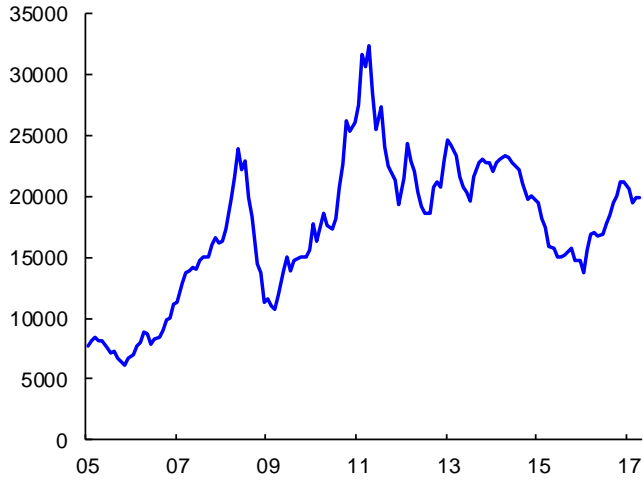
Nickel (\$/ton)



Commodity Prices Movements (Continued)

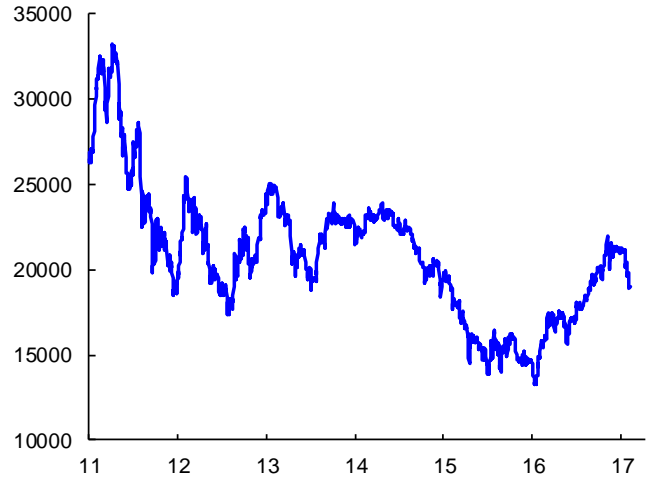
Monthly (from 2005)

Tin (\$/ton)



Daily (from 2011)

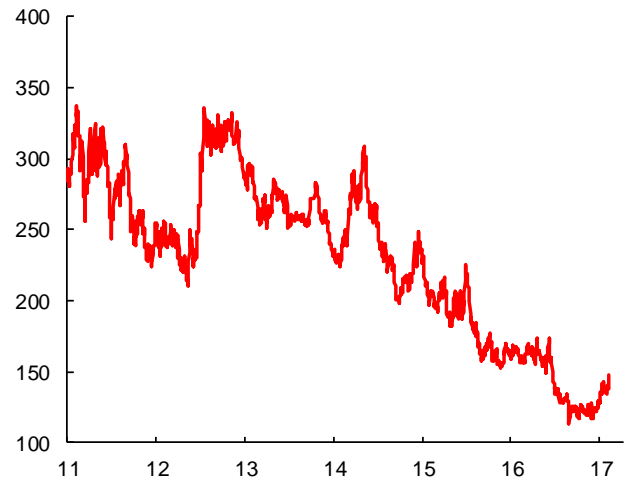
Tin (\$/ton)



Wheat (\$/ton)



Wheat (\$/ton)



Corn (\$/ton)



Corn (\$/ton)



Commodity Prices Movements (Continued)

Monthly (from 2005)

Cocoa (\$/ton)



Daily (from 2011)

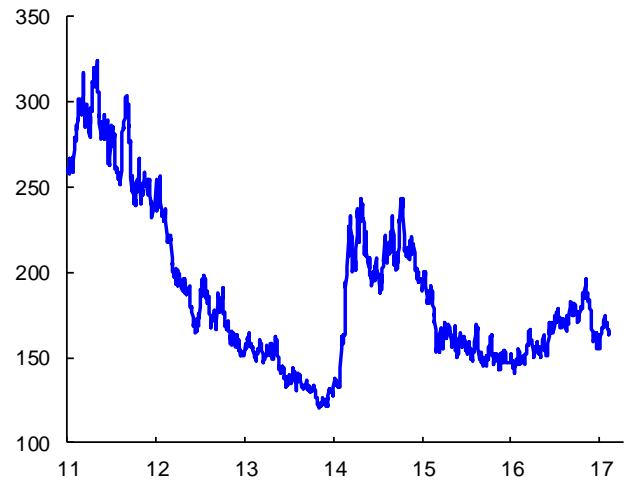
Cocoa (\$/ton)



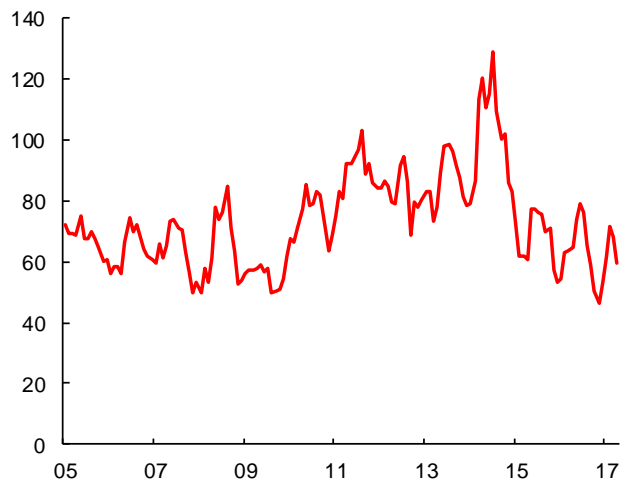
Coffee (cents/lb)



Coffee (cents/lb)



Swine (cents/lb)



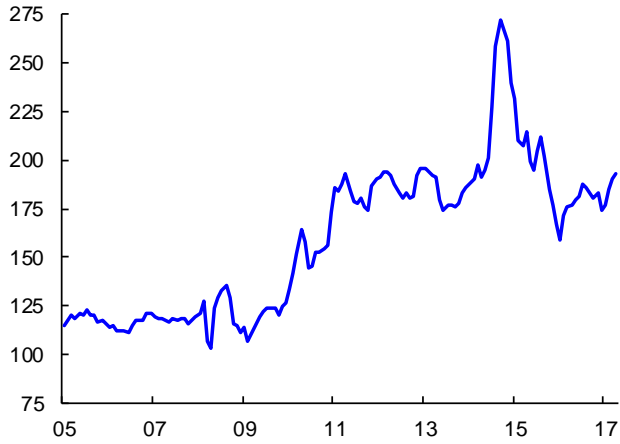
Swine (cents/lb)



Commodity Prices Movements (Continued)

Monthly (from 2005)

Beef (cents/pound)



Source: Meat & Livestock Australia.

Daily (from 2011)

Beef (cents/lb)



Source: Bloomberg, L.P.

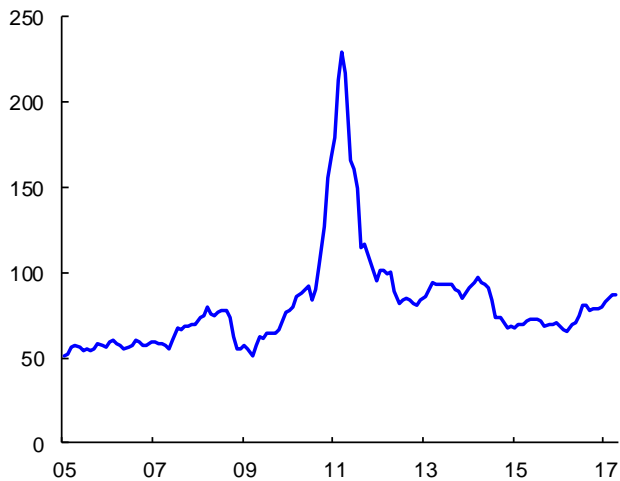
Soybeans (\$/ton)



Soybeans (\$/ton)



Cotton (cents/pound)



Cotton (cents/lb)



Commodity Prices Movements (Continued)

Monthly (from 2005)

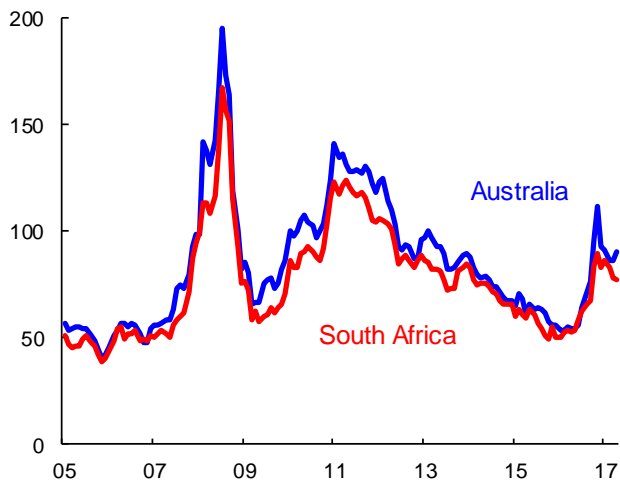
Uranium(\$/lb)



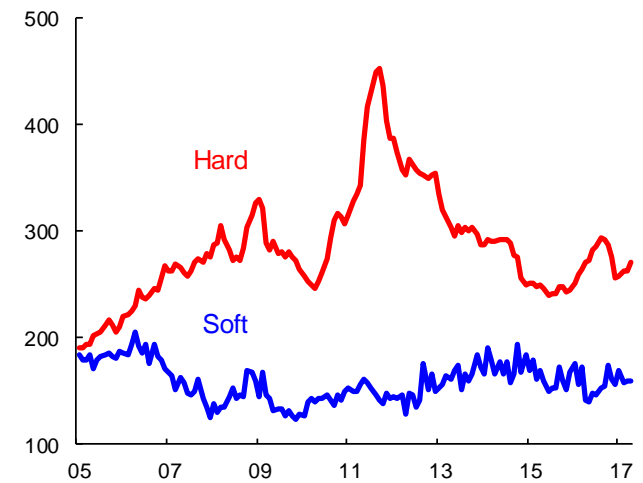
Zinc (\$/ton)



Coal (\$/ton)



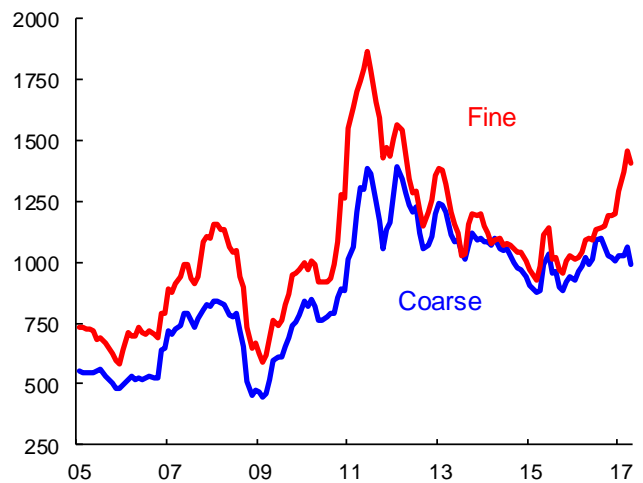
Logs (\$/cubic meter)



Rubber (\$/lb)



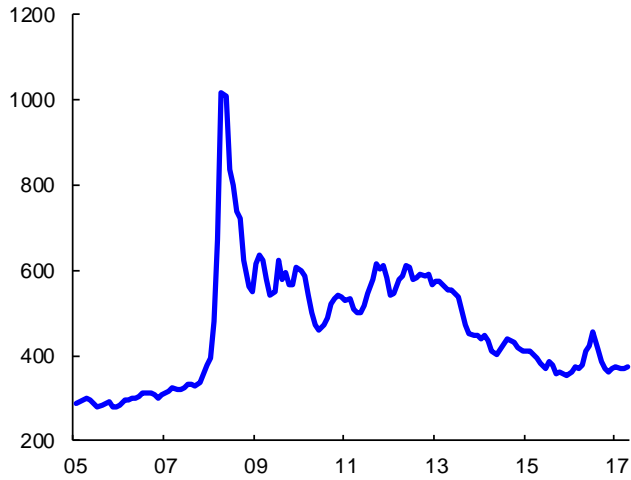
Wool (cents/kg)



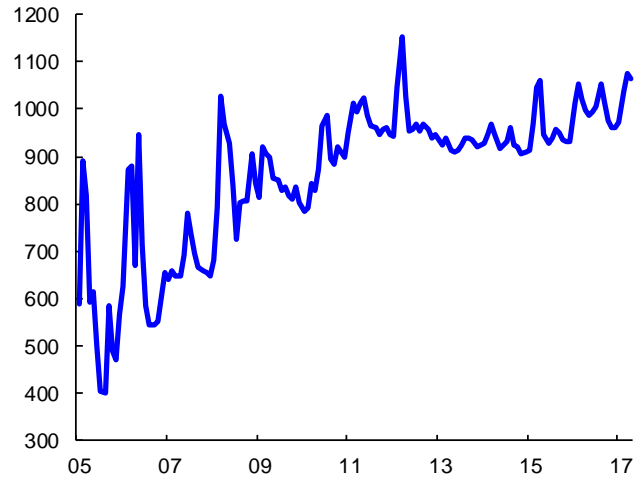
Commodity Prices Movements (Continued)

Monthly (from 2005)

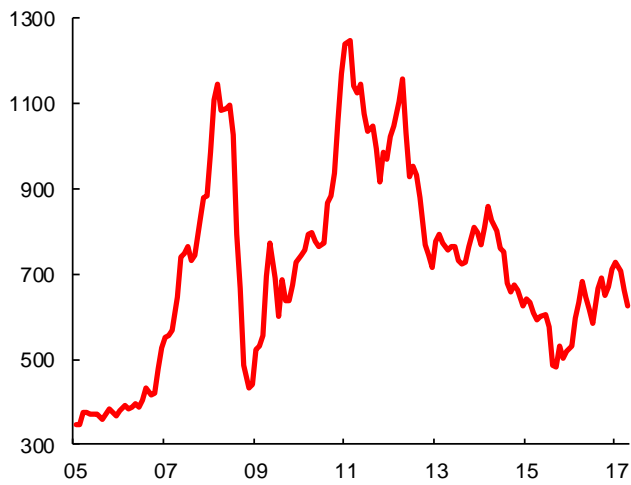
Rice (\$/ton)



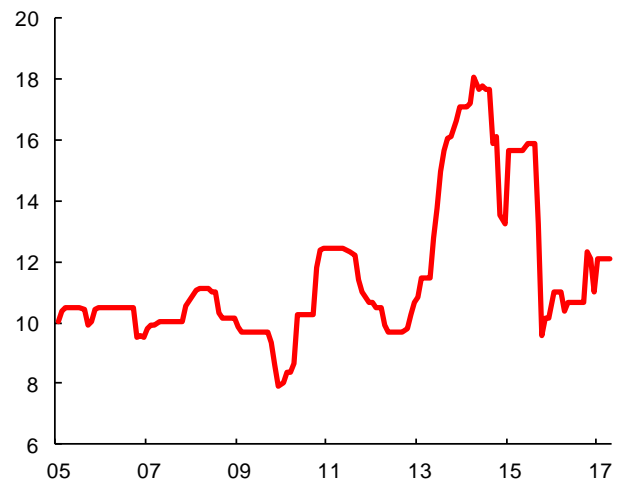
Bananas (\$/ton)



Palm Oil (\$/ton)



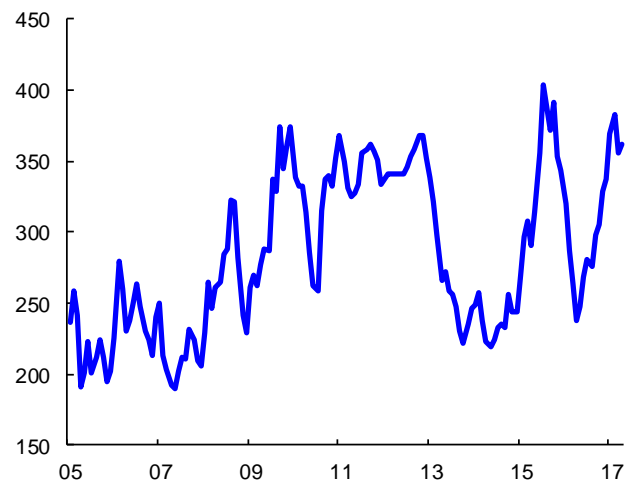
Shrimp (\$/kg)



Sugar (cents/pound)



Tea (cents/kg)



Commodity Prices Movements (Continued)

Daily (from 2011)

Gold (\$/troy ounce)



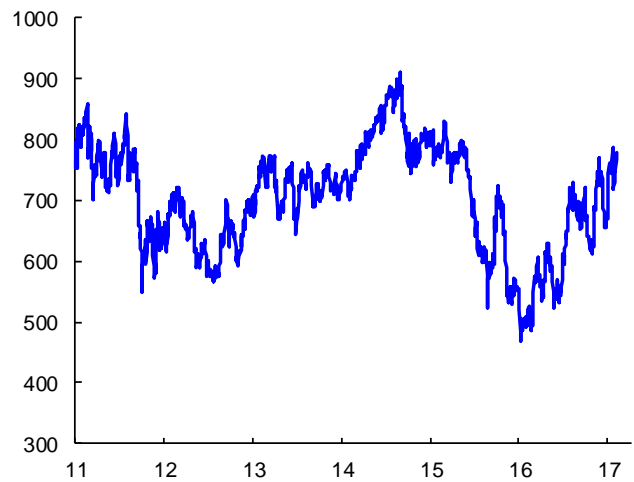
Silver (\$/troy ounce)



Platinum (\$/ounce)

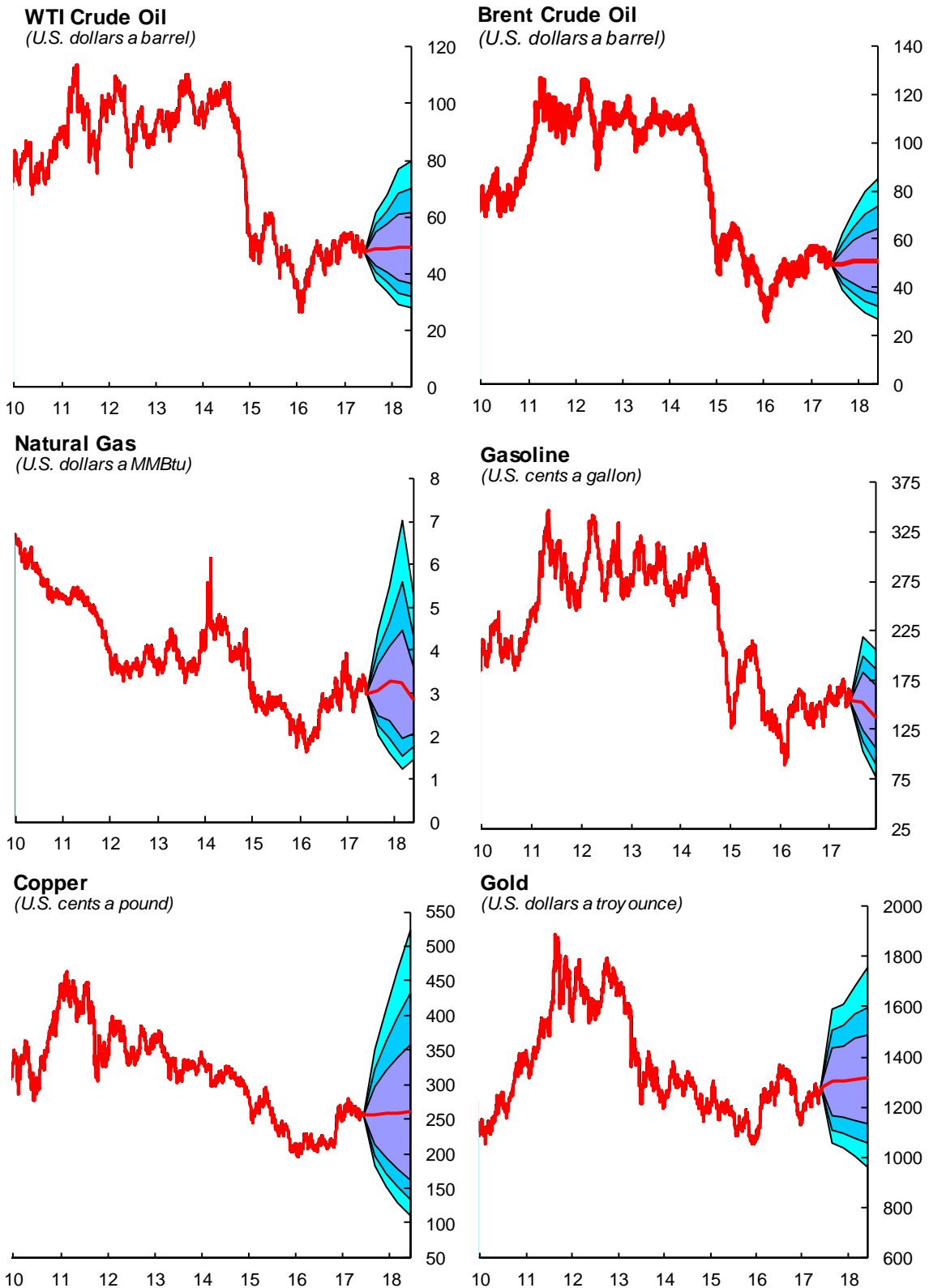


Palladium (\$/ounce)



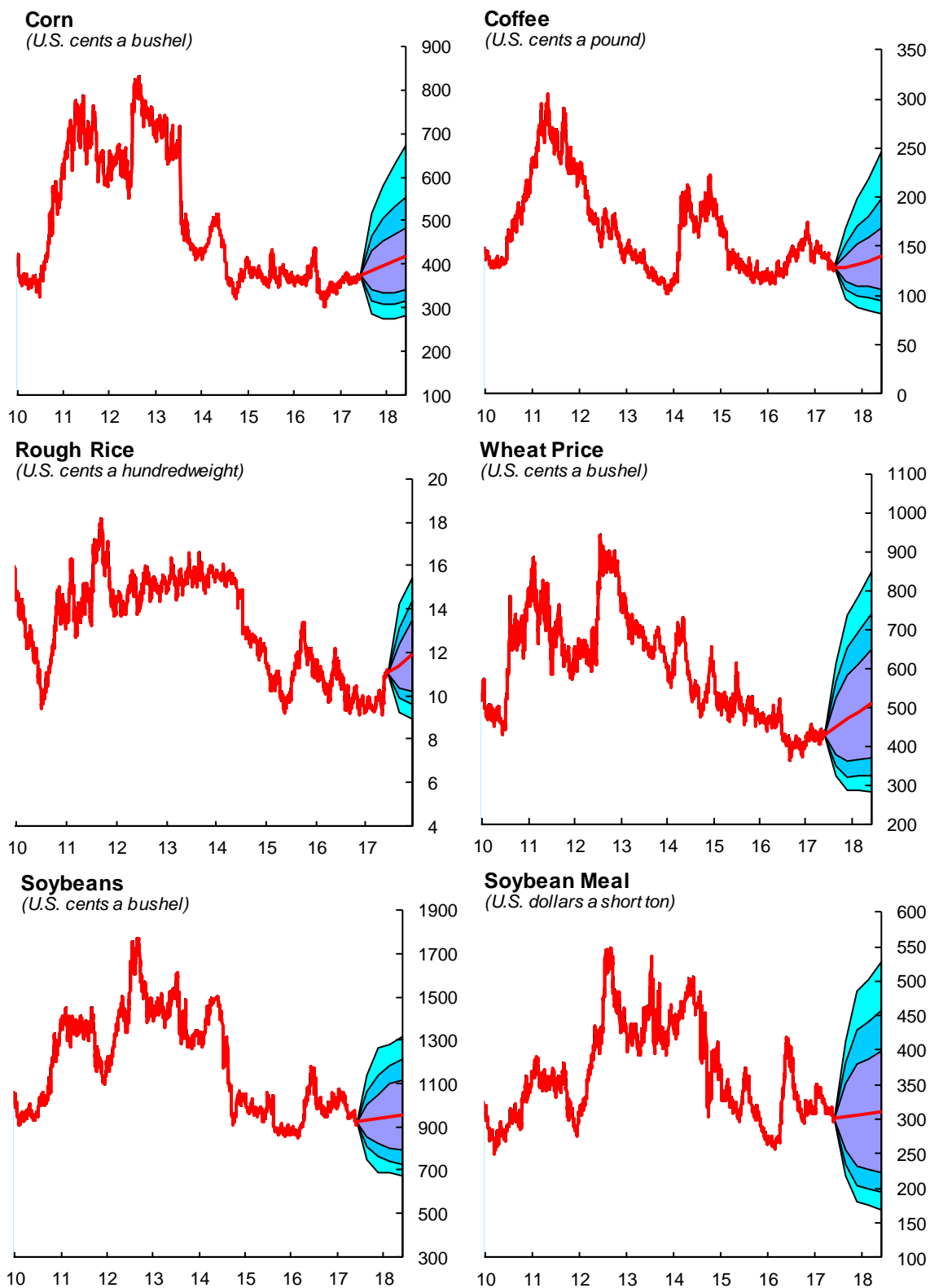
Selected Commodities—Market Price Outlook and Risks

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	0.0	0.0	0.0
< 25	0.0	0.0	0.4	0.7
< 30	0.0	0.5	3.2	4.5
< 35	0.6	4.3	12.0	14.7
< 40	7.7	17.2	28.1	31.2
< 45	32.9	40.1	47.9	50.2
> 50	33.0	34.9	33.4	32.5
> 55	10.9	16.6	19.4	19.5
> 60	2.5	6.7	10.3	10.9
> 65	0.4	2.4	5.2	5.8
> 70	0.1	0.8	2.5	3.0

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
< 25	0.0	0.0	0.4	1.0
< 30	0.0	0.7	2.6	4.5
< 35	0.3	4.3	9.0	12.7
< 40	4.3	14.3	21.3	26.0
< 45	21.3	32.9	39.1	43.2
> 50	42.5	43.0	41.2	39.3
> 55	13.2	22.2	24.5	24.6
> 60	3.2	9.8	13.2	14.3
> 65	0.7	3.9	6.6	7.9
> 70	0.1	1.5	3.2	4.2

U.S. Natural Gas

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

Threshold Prices	Months Forward			
	3	6	9	12
< 1.00	0.0	0.0	0.2	0.0
< 1.50	0.0	1.1	3.9	1.7
< 2.00	2.4	8.4	17.4	12.2
< 2.50	20.9	24.0	39.3	40.9
< 3.00	56.8	47.7	62.4	72.8
> 3.50	15.7	26.3	20.5	11.0
> 4.00	4.2	10.1	10.5	4.6
> 4.50	0.9	3.5	5.3	2.0
> 5.00	0.2	1.3	2.7	0.8
> 5.50	0.0	0.5	1.4	0.4
> 6.00	0.0	0.2	0.7	0.1

Gasoline

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

Threshold Prices	Months Forward			
	3	6	9	12
< 0.25	0.0	0.0		
< 0.50	0.0	0.0		
< 0.75	0.0	1.2		
< 1.00	1.7	10.1		
< 1.25	19.2	34.6		
> 1.50	44.4	30.4		
> 1.75	15.9	8.8		
> 2.00	4.1	1.9		
> 2.25	0.8	0.4		
> 2.50	0.1	0.1		
> 2.75	0.0	0.0		

Copper

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

Threshold Prices	Months Forward			
	3	6	9	12
< 1.00	0.0	0.0	0.1	0.5
< 1.50	0.1	2.0	5.8	10.1
< 1.75	1.5	8.6	15.6	21.7
< 2.00	9.3	21.9	30.2	36.2
< 2.25	28.1	40.0	46.5	51.0
> 2.50	46.5	41.5	38.3	35.8
> 2.75	24.3	26.1	25.8	25.1
> 3.00	10.6	15.2	16.6	17.0
> 3.25	4.0	8.4	10.3	11.3
> 3.50	1.3	4.4	6.2	7.4
> 4.00	0.1	1.1	2.2	3.0

Gold

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

Threshold Prices	Months Forward			
	3	6	9	12
< 700	0.0	0.0	0.0	0.1
< 800	0.0	0.0	0.2	0.5
< 900	0.0	0.1	0.5	1.5
< 1000	0.8	1.3	2.6	4.3
< 1100	6.8	8.5	11.0	12.9
< 1200	26.2	28.4	30.0	31.4
> 1300	44.2	43.6	45.0	44.5
> 1400	19.1	20.0	23.1	23.5
> 1500	6.1	7.1	9.8	10.6
> 1600	1.5	1.9	3.6	4.4
> 1700	0.3	0.4	1.2	1.9

Options-based Price Thresholds (concluded)

Corn

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

Threshold Prices	Months Forward			
	3	6	9	12
< 2.0	4.7	6.4	6.8	5.6
< 2.5	11.2	14.0	14.5	12.7
< 3.0	25.9	28.2	27.9	25.0
< 3.5	49.2	47.3	45.3	41.3
> 4.0	28.0	33.6	37.2	41.6
> 4.5	13.6	19.5	23.2	27.2
> 5.0	6.6	10.9	13.9	16.7
> 5.5	3.5	6.3	8.4	10.2
> 6.0	1.9	3.8	5.2	6.3
> 6.5	1.1	2.4	3.4	4.1
> 7.0	0.6	1.5	2.3	2.8

Coffee

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

Threshold Prices	Months Forward			
	3	6	9	12
< 0.9	1.2	3.4	4.0	5.7
< 1	4.0	8.4	9.7	13.1
< 1.1	12.4	19.9	21.4	25.3
< 1.2	34.5	39.0	38.9	40.9
> 1.3	34.9	39.1	41.7	42.9
> 1.4	14.2	21.9	25.7	29.1
> 1.5	5.6	11.3	14.6	18.6
> 1.6	2.5	5.9	8.2	11.5
> 1.7	1.2	3.3	4.7	7.1
> 1.8	0.6	2.0	2.9	4.4
> 1.9	0.3	1.2	1.8	2.8

Rough Rice

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

Threshold Prices	Months Forward			
	3	6	9	12
< 0.05	0.0			0.1
< 0.06	0.0			0.5
< 0.07	0.0			2.5
< 0.08	0.2			7.3
< 0.09	2.0			16.4
< 0.10	10.1			31.4
> 0.11	57.8			49.1
> 0.12	19.8			30.8
> 0.13	5.9			18.2
> 0.14	2.0			10.6
> 0.15	0.7			6.3

Wheat

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

Threshold Prices	Months Forward			
	3	6	9	12
< 2.5	0.0	0.6	0.7	0.9
< 3.0	0.9	4.8	4.9	5.1
< 3.5	8.6	16.8	16.0	15.7
< 4.0	30.6	36.2	33.9	32.2
> 4.5	40.2	42.6	46.2	49.3
> 5.0	17.7	25.1	29.0	32.6
> 5.5	6.2	13.5	16.7	20.1
> 6.0	1.8	6.7	9.0	11.7
> 6.5	0.4	3.1	4.6	6.4
> 7.0	0.1	1.4	2.2	3.4
> 7.5	0.0	0.6	1.0	1.8

Soybeans

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

Threshold Prices	Months Forward			
	3	6	9	12
< 7	0.9	3.4	3.9	5.2
< 7.5	2.9	6.9	9.5	11.3
< 8	7.4	13.6	18.9	20.8
< 8.5	17.9	25.8	31.4	32.9
< 9	40.2	43.9	45.9	46.4
> 9.5	32.6	36.8	40.0	40.5
> 10	14.4	21.6	27.8	29.0
> 10.5	6.2	11.9	18.0	19.7
> 11	3.0	6.8	11.1	12.8
> 11.5	1.4	4.0	6.5	7.9
> 12	0.7	2.5	3.6	4.8

Soybean Meal

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

Threshold Prices	Months Forward			
	3	6	9	12
< 200	0.7	6.2	7.4	9.1
< 225	4.5	15.4	17.0	19.1
< 250	15.6	29.1	30.6	32.5
< 275	34.4	45.0	45.9	46.9
> 300	43.7	39.7	39.5	39.4
> 325	25.1	26.8	27.3	27.9
> 350	12.6	17.2	18.0	19.0
> 375	5.6	10.5	11.3	12.4
> 400	2.2	6.1	6.9	7.9
> 425	0.8	3.5	4.1	4.9
> 450	0.3	1.9	2.4	3.0

Options-based Probabilities of Price Changes

(in percent)

WTI Crude Oil

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.2	0.4
-30%	0.1	2.1	7.8	10.0
-10%	18.4	28.1	38.2	41.0
+10%	21.8	26.3	27.0	26.5
+30%	1.5	4.9	8.4	9.0
+50%	0.0	0.6	2.1	2.6
+100%	0.0	0.0	0.0	0.1

Brent Crude Oil

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.4	0.9
-30%	0.3	4.0	8.6	12.2
-10%	19.8	31.6	38.0	42.1
+10%	14.5	23.4	25.5	25.5
+30%	0.8	4.2	7.0	8.3
+50%	0.0	0.7	1.7	2.4
+100%	0.0	0.0	0.0	0.1

U.S. Natural Gas

Price changes	Months Forward			
	3	6	9	12
-50%	0.1	2.4	6.7	3.5
-30%	10.8	17.0	30.1	27.6
-10%	54.1	45.6	60.8	70.9
+10%	11.7	21.3	17.5	8.9
+30%	1.9	5.6	7.2	2.9
+50%	0.2	1.4	2.9	0.9
+100%	0.0	0.1	0.3	0.1

Gasoline

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	1.5		
-30%	4.5	15.7		
-10%	38.2	54.0		
+10%	20.7	12.1		
+30%	4.0	1.9		
+50%	0.6	0.3		
+100%	0.0	0.0		

Copper

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.2	1.2	3.0
-30%	1.4	8.2	15.2	21.2
-10%	27.0	39.1	45.8	50.4
+10%	25.4	26.9	26.4	25.6
+30%	4.3	8.8	10.7	11.7
+50%	0.4	2.3	3.9	4.9
+100%	0.0	0.1	0.2	0.5

Gold

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.0	0.0
-30%	0.0	0.0	0.3	0.9
-10%	6.4	8.2	10.6	12.5
+10%	32.8	32.9	35.2	35.1
+30%	1.8	2.4	4.2	5.0
+50%	0.0	0.1	0.3	0.8
+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	0.0
-30%	0.7	1.4	1.6	1.2
-10%	12.7	15.6	16.1	14.2
+10%	26.6	32.5	36.0	40.4
+30%	3.6	6.3	8.4	10.3
+50%	0.6	1.6	2.4	2.9
+100%	0.0	0.1	0.1	0.2

Coffee

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.2	0.4	0.6
-30%	2.1	4.9	5.8	8.1
-10%	36.9	40.9	40.6	42.3
+10%	6.8	13.2	16.7	20.7
+30%	0.9	2.6	3.7	5.7
+50%	0.1	0.7	1.1	1.7
+100%	0.0	0.0	0.1	0.2

Rough Rice

Price changes	Months Forward			
	3	6	9	12
-50%	0.0			0.1
-30%	0.0			2.6
-10%	2.1			17.0
+10%	55.0			47.8
+30%	5.5			17.5
+50%	0.6			6.0
+100%	0.0			0.4

Wheat

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.1	0.1	0.1
-30%	0.8	4.3	4.4	4.7
-10%	21.0	28.5	26.8	25.7
+10%	31.6	36.3	40.1	43.5
+30%	6.0	13.2	16.4	19.8
+50%	0.7	3.8	5.5	7.6
+100%	0.0	0.1	0.2	0.5

Soybeans

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.0	0.0	0.0
-30%	0.4	2.3	2.2	3.1
-10%	23.5	31.0	35.9	37.1
+10%	5.6	10.9	16.8	18.5
+30%	0.3	1.5	1.9	2.7
+50%	0.0	0.2	0.1	0.3
+100%	0.0	0.0	0.0	0.0

Soybean Meal

Price changes	Months Forward			
	3	6	9	12
-50%	0.0	0.4	0.7	1.1
-30%	3.2	13.0	14.6	16.6
-10%	40.9	49.7	50.4	51.2
+10%	14.5	18.8	19.5	20.5
+30%	1.7	5.2	5.9	6.8
+50%	0.1	1.2	1.5	2.0
+100%	0.0	0.0	0.0	0.1

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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