

Review of 2017 S&P GSCI[®] Index Rebalancing

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S&P GSCI ADVISORY PANEL MEETING

Pro Forma 2017 S&P GSCI Rebalance, Final rebalance will be published in November

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Overview

- There should be no substantial modifications to and no contracts added to or removed from the S&P GSCI in 2017.
- The Investment Support Level (ISL) will likely be decreased from the current level of US\$ 180 billion to the level of US\$ 160 billion effective January 2017.
- Sector weights will likely remain little changed.
- Brent Crude Oil and Heating Oil should have the largest weight percent decrease and WTI Crude Oil and Corn should have the largest weight percent increases.
- WTI Crude Oil will continue to hold the largest weight in the index.
- Nickel had the largest World Production Average (WPA) increase of 9.4%.
- Cocoa had the only decrease in World Production Average (WPA), decreasing 0.4%.
- Cocoa saw the largest percentage volume increase, up 31.56% and Lead volume saw the largest percentage volume decrease, dropping 14.09%.

World Production Quantity Sources

WORLD PRODUCTION QUANTITY SOURCES		
Commodity	Source	Comments
Wheat	FAOSTATS	
Corn	FAOSTATS	
Soybeans	FAOSTATS	
Lean Hogs	FAOSTATS & UN data	FAO data more robust than UN data
Cattle	FAOSTATS & UN data	FAO data more robust than UN data
Coffee	FAOSTATS	
Sugar	USDA	
Cocoa	FAOSTATS	
Cotton	USDA	
Gold	USGS - MYB	
Silver	USGS - MYB	
Crude Oil	UN Data	
Natural Gas	UN Data	
Aluminum	USGS - MYB	
Copper	USGS - MYB	
Lead	USGS - MYB	
Nickel	USGS - MYB	
Zinc	USGS - MYB	

World Production Averages

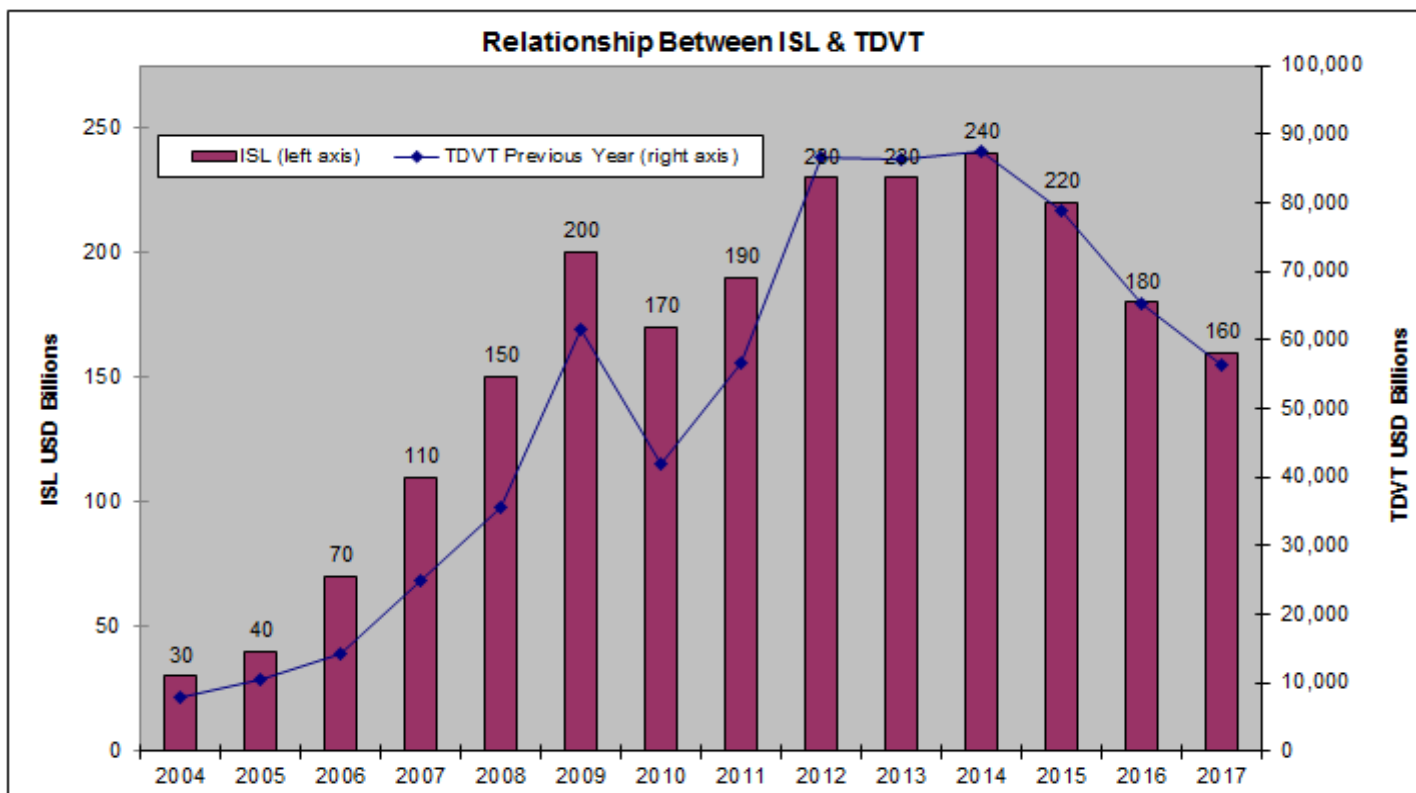
WORLD PRODUCTION AVERAGE COMPARISONS				
Commodity	WPQ Units	2016 WPA	2017 WPA	Percentage Change
Wheat	M ton	678,027,825	684,023,002	0.9%
Corn	M ton	852,546,224	889,771,187	4.4%
Soybeans	M ton	244,561,496	253,588,379	3.7%
Lean Hogs	1000 M ton	39,767,313	40,561,411	2.0%
Cattle	M ton	51,514,494	53,177,821	3.2%
Coffee	M ton	8,381,239	8,556,349	2.1%
Sugar	M ton	158,969,400	161,909,000	1.8%
Cocoa	M ton	4,498,280	4,482,378	-0.4%
Cotton	M ton	25,278,836	25,818,139	2.1%
Gold	1 Kg	2,544,000	2,644,000	3.9%
Silver	1 M ton	23,420	24,480	4.5%
Crude Oil	1000 M ton	3,623,323,516	3,642,593,890	0.5%
Natural Gas	1 Petajoule	33,382	34,398	3.0%
Aluminum	1000 M ton	47,090,000	48,692,000	3.4%
Copper	1000 M ton	19,100,000	19,680,000	3.0%
Lead	1000 M ton	9,484,000	9,894,000	4.3%
Nickel	1 M ton	1,516,000	1,658,000	9.4%
Zinc	1000 M ton	12,380,000	12,580,000	1.6%

WPA Comparison Table (2012 – 2017)

Commodity	Unit	2012	2013	2014	2015	2016	2017
Wheat	1000 M ton	631,628,801	642,509,771 1.7%	647,389,857 0.8%	666,466,762 2.9%	678,027,825 1.7%	684,023,002 0.9%
Corn	1000 M ton	753,063,006	771,424,261 2.4%	799,358,319 3.6%	835,882,151 4.6%	852,546,224 2.0%	889,771,187 4.4%
Soybeans	1000 M ton	218,615,028	222,056,398 1.6%	232,246,870 4.6%	240,278,555 3.5%	244,561,496 1.8%	253,588,379 3.7%
Lean Hogs	1000 M ton	33,032,151	34,873,804 5.6%	37,519,258 7.6%	38,541,813 2.7%	39,767,313 3.2%	40,561,411 2.0%
Cattle	1000 M ton	48,166,185	48,126,079 -0.1%	48,720,841 1.2%	49,637,826 1.9%	51,514,494 3.8%	53,177,821 3.2%
Coffee	1000 M ton	7,895,326	7,962,799 0.9%	8,077,173 1.4%	8,245,923 2.1%	8,381,239 1.6%	8,556,349 2.1%
Sugar	1000 M ton	156,364,508	155,124,759 -0.8%	156,159,370 0.7%	157,463,200 0.8%	158,969,400 1.0%	161,909,000 1.8%
Cocoa	1000 M ton	4,116,321	4,100,944 -0.4%	4,178,555 1.9%	4,277,231 2.4%	4,498,280 5.2%	4,482,378 -0.4%
Cotton	1000 M ton	24,226,913	23,809,232 -1.7%	24,353,925 2.3%	25,013,039 2.7%	25,278,836 1.1%	25,818,139 2.1%
Gold	1 Kg	2,382,000	2,388,000 0.3%	2,404,000 0.7%	2,470,000 2.7%	2,544,000 3.0%	2,644,000 3.9%
Silver	1 M ton	20,700	21,040 1.6%	21,480 2.1%	22,300 3.8%	23,420 5.0%	24,480 4.5%
Crude Oil	1000 M ton	3,603,987,000	3,610,557,977 0.2%	3,604,982,089 -0.2%	3,604,790,667 0.0%	3,623,323,516 1.4%	3,642,593,890 0.5%
Natural Gas	1 Petajoule	30,604	31,096 1.6%	31,919 2.6%	32,783 2.7%	33,382 1.7%	34,398 3.0%
Aluminum	1000 M ton	42,530,000	43,640,000 2.6%	44,256,000 1.4%	45,816,000 3.5%	47,090,000 2.8%	48,692,000 3.4%
Copper	1000 M ton	17,140,000	17,700,000 3.3%	18,200,000 2.8%	18,660,000 2.5%	19,100,000 2.4%	19,680,000 3.0%
Lead	1000 M ton	7,872,000	8,280,000 5.2%	8,710,000 5.2%	9,170,000 5.3%	9,484,000 3.4%	9,894,000 4.3%
Nickel	1 M ton	1,352,000	1,376,000 1.8%	1,410,000 2.5%	1,442,000 2.3%	1,516,000 5.1%	1,658,000 9.4%
Zinc	1000 M ton	11,040,000	11,120,000 0.7%	11,580,000 4.1%	12,080,000 4.3%	12,380,000 2.5%	12,580,000 1.6%

Investment Support Level

- Purpose of ISL:
 - Estimate for liquidity
 - Trigger for CPW changes
 - Not an accurate estimate of commodity investment space



ISL Commentary

- We are recommending an ISL level of 160, which is a decrease from 2016. We have historically captured an average of about 75% of the change in TDVT. This year we will be capturing just above the historical average change, due to the decrease in TDVT. The change is in line with the percent change in overall TDVT. We will continue to maintain our conservative approach to the increase in ISL, to allow for a moderate buffer, thus not calling for a potential intra-year rebalance.

Year	ISL	% Change In ISL	TDVT	% Change In TDVT	% Change In TDVT Captured By ISL Change
2004	30	0.00%	7828.4	33.82%	0.00%
2005	40	33.33%	10582.1	35.18%	94.76%
2006	70	75.00%	14301.3	35.15%	213.39%
2007	110	57.14%	24964	74.56%	76.64%
2008	150	36.36%	35670.6	42.89%	84.79%
2009	200	33.33%	61399.1	72.13%	46.21%
2010	170	-15.00%	41984.7	-31.62%	47.44%
2011	190	11.76%	56608.4	34.83%	33.78%
2012	230	21.05%	86698.5	53.15%	39.61%
2013	230	0.00%	86253.4	-0.51%	0.00%
2014	240	4.35%	87565.9	1.52%	285.73%
2015	220	-8.33%	78917.0	-9.88%	84.37%
2016	180	-18.18%	65320.9	-17.23%	105.53%
2017	160	-11.11%	56214.9	-13.94%	79.70%

Average Excluding Current Year	85.56%
Average With Current Year	85.14%
Average Excluding 2006 & CY	74.90%
Average Excluding 2006 With CY	75.27%

2017 S&P GSCI CPW Calculation – Pro Forma

Symbol	Commodity	CF	Contract Size	Lot Size	ISL	WPA	Volume	TQT	% TQT	CPW	ACRP	TDW	RPDW	TDVT (MM)	TVM
W	Chicago Wheat	36.7437	5000	100	160	684,023,002	31,550,062	4,293,261,430	0.77958534	19593.74	4.650625	91123.1371	3.90%	733.6	117.5
KW	Kansas Wheat	36.7437	5000	100	160	684,023,002	8,920,250	1,213,847,544	0.22041466	5539.8	4.58166667	25381.5170	1.09%	204.3	117.5
C	Corn	39.3683	5000	100	160	889,771,187	87,203,682	11,075,367,999	1	35028.78	3.66125	128249.1208	5.49%	1596.4	181.7
S	Soybeans	36.7437	5000	100	160	253,588,379	61,128,360	8,318,209,652	1	9317.775	9.48708333	88398.5079	3.78%	2899.6	478.8
KC	Coffee	2204.623	37500	100	160	8,556,349	9,318,613	158,506,914	1	18863.52	1.27454167	24042.3422	1.03%	445.4	270.4
SB	Sugar	2204.623	112000	100	160	161,909,000	34,610,684	1,758,303,623	1	356948.3	0.16139167	57608.4811	2.47%	625.6	158.5
CC	Cocoa	1	10	1	160	4,482,378	9,472,190	94,721,900	1	4.482378	3048.08333	13662.6617	0.58%	288.7	308.5
CT	Cotton	2204.623	50000	100	160	25,818,139	7,448,056	168,919,040	1	56919.26	0.63104167	35918.4247	1.54%	235	95.5
LH	Lean Hogs	2204.623	40000	100	160	40,561,411	8,700,450	157,858,282	1	89422.62	0.69364583	62027.6278	2.66%	241.4	56.8
LC	Live Cattle	2204.623	40000	100	160	53,177,821	13,385,060	242,854,402	0.80871456	94811.31	1.25241667	118743.2648	5.08%	670.5	82.4
FC	Feeder Cattle	2204.623	50000	100	160	53,177,821	2,532,777	57,442,406	0.19128544	22425.74	1.5520625	34806.1501	1.49%	196.6	82.4
CL	WTI Crude Oil	7.33	1000	1	160	3,642,593,890	289,011,929	39,428,639,700	0.47332046	12637.76	42.1441667	532607.8637	22.80%	12180.2	333.8
HO	Heating Oil	315	42000	1	160	3,642,593,890	38,697,174	5,159,623,200	0.06193861	71069.42	1.332925	94730.2067	4.06%	2166.4	333.8
XB	RBOB Gasoline	354.9	42000	1	160	3,642,593,890	42,928,784	5,080,329,467	0.06098673	78841	1.38231667	108983.2283	4.67%	2492.3	333.8
CO	Brent Crude Oil	7.33	1000	1	160	3,642,593,890	198,482,633	27,078,121,828	0.32505887	8679.141	44.3791667	385173.0450	16.49%	8808.5	333.8
QS	Gas Oil	1	100	1	160	3,642,593,890	65,554,938	6,555,493,800	0.07869532	286.6551	399.895833	114632.1801	4.91%	2621.5	333.8
NG	Natural Gas	947086.29	10000	1	160	34,398	118,297,510	1,249,068	1	32577.49	2.37816667	77474.7008	3.32%	2813.3	530.1
LA	Aluminum	1	25	1	160	48,692,000	54,328,348	1,358,208,700	1	48.692	1559.4375	75932.1308	3.25%	2118	407.2
LP	Copper	1	25	1	160	19,680,000	37,013,626	925,340,650	1	19.68	4820	94857.6000	4.06%	4460.1	686.4
LN	Nickel	1	6	1	160	1,658,000	20,164,280	120,985,680	1	1.658	9276.70833	15380.7824	0.66%	1122.3	1065.2
LL	Lead	1	25	1	160	9,894,000	10,880,565	272,014,125	1	9.894	1749.08333	17305.4305	0.74%	475.8	401.3
LX	Zinc	1	25	1	160	12,580,000	26,901,404	672,535,100	1	12.58	1854.58333	23330.6583	1.00%	1247.3	780.4
GC	Gold	32.15075	100	1	160	2,644,000	51,853,383	161,282,032	1	85.00658	1205.5	102475.4322	4.39%	6250.9	890.4
SI	Silver	32150.75	5000	1	160	24,480	16,337,598	2,540,780	1	787.0504	16.1740833	12729.8188	0.55%	1321.2	1515.1

2017 S&P GSCI CPW Comparison

Symbol	Commodity	2016 CPW	2017 CPW	% Change
W	Chicago Wheat	20181.8	19593.74	-2.91%
KW	Kansas Wheat	4731.456	5539.8	17.08%
C	Corn	33563.3	35028.78	4.37%
S	Soybeans	8986.094	9317.775	3.69%
KC	Coffee	18477.47	18863.52	2.09%
SB	Sugar	350467.6	356948.3	1.85%
CC	Cocoa	4.49828	4.482378	-0.35%
CT	Cotton	55730.3	56919.26	2.13%
LH	Lean Hogs	87671.93	89422.62	2.00%
LC	Live Cattle	92186.84	94811.31	2.85%
FC	Feeder Cattle	21383.2	22425.74	4.88%
CL	WTI Crude Oil	11568.56	12637.76	9.24%
HO	Heating Oil	78754.85	71069.42	-9.76%
RB	RBOB Gasoline	84209.46	78841	-6.38%
LCO	Brent Crude Oil	9256.426	8679.141	-6.24%
LGO	Gas Oil	294.9689	286.6551	-2.82%
NG	Natural Gas	31615.91	32577.49	3.04%
MAL	Aluminum	47.09	48.692	3.40%
MCU	Copper	19.1	19.68	3.04%
MNI	Nickel	1.516	1.658	9.37%
MPB	Lead	9.484	9.894	4.32%
MZN	Zinc	12.38	12.58	1.62%
GC	Gold	81.79151	85.00658	3.93%
SI	Silver	752.9706	787.0504	4.53%

2017 ACRP Comparison

Symbol	Commodity	2016 ACRP	2017 ACRP	% Change
W	Chicago Wheat	521.4166667	465.0625	-10.81%
KW	Kansas Wheat	553.7708333	458.1666667	-17.26%
C	Corn	375.7291667	366.125	-2.56%
S	Soybeans	978.5833333	948.7083333	-3.05%
KC	Coffee	151.3541667	127.4541667	-15.79%
SB	Sugar	13.54583333	16.13916667	19.14%
CC	Cocoa	2997.083333	3048.083333	1.70%
CT	Cotton	63.40916667	63.10416667	-0.48%
LH	Hogs	78.20833333	69.36458333	-11.31%
LC	Live Cattle	154.73125	125.2416667	-19.06%
FC	Feeder Cattle	216.0291667	155.20625	-28.15%
CL	WTI Crude Oil	59.37	42.14416667	-29.01%
HO	Heating Oil	1.970741667	1.332925	-32.36%
RB	RBOB Gasoline	1.878316667	1.382316667	-26.41%
LCO	Brent Crude Oil	65.7775	44.37916667	-32.53%
LGO	Gas Oil	588.25	399.8958333	-32.02%
NG	Natural Gas	3.0555	2.378166667	-22.17%
MAL	Aluminum	1820.854167	1559.4375	-14.36%
MCU	Copper	6008.1875	4820	-19.78%
MNI	Nickel	13711.20833	9276.708333	-32.34%
MPB	Lead	1885.958333	1749.083333	-7.26%
MZN	Zinc	2124.354167	1854.583333	-12.70%
GC	Gold	1182.491667	1205.5	1.95%
SI	Silver	16.03733333	16.17408333	0.85%

Yearly Volume Comparison

Symbol	Commodity	2016 Volume	2017 Volume	% Change
W	Chicago Wheat	29,726,052	31,550,062	6.14%
KW	Kansas Wheat	6,969,028	8,920,250	28.00%
C	Corn	80,645,912	87,203,682	8.13%
S	Soybeans	54,871,040	61,128,360	11.40%
KC	Coffee	7,663,186	9,318,613	21.60%
SB	Sugar	31,794,872	34,610,684	8.86%
CC	Cocoa	7,199,851	9,472,190	31.56%
CT	Cotton	6,644,964	7,448,056	12.09%
LH	Lean Hogs	9,686,743	8,700,450	-10.18%
LC	Live Cattle	12,823,578	13,385,060	4.38%
FC	Feeder Cattle	2,379,595	2,532,777	6.44%
CL	WTI Crude Oil	227,818,975	289,011,929	26.86%
HO	Heating Oil	36,926,529	38,697,174	4.80%
RB	RBOB Gasoline	39,484,082	42,928,784	8.72%
LCO	Brent Crude Oil	182,286,201	198,482,633	8.89%
LGO	Gas Oil	58,088,045	65,554,938	12.85%
NG	Natural Gas	114,612,040	118,297,510	3.22%
MAL	Aluminum	62,312,305	54,328,348	-12.81%
MCU	Copper	39,909,363	37,013,626	-7.26%
MNI	Nickel	19,019,793	20,164,280	6.02%
MPB	Lead	12,664,596	10,880,565	-14.09%
MZN	Zinc	29,199,040	26,901,404	-7.87%
GC	Gold	43,984,801	51,853,383	17.89%
SI	Silver	13,772,316	16,337,598	18.63%

Total Volume	1,130,482,907	1,244,722,356	10.11%
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2017 Dollar Weight Comparison – Pro Forma

Symbol	Commodity	2016 CPW	2017 CPW	2016 ACRP	2016 TDW	2017 TDW	2016 PDW	2017 RPDW	Difference (basis pts)
W	Chicago Wheat	20181.8	19593.74	4.650625	93857.98363	91123.13709	4.07%	3.90%	-17
KW	Kansas Wheat	4731.456	5539.8	4.581666667	21677.95424	25381.517	0.94%	1.09%	15
C	Corn	33563.3	35028.78	3.66125	122883.6321	128249.1208	5.33%	5.49%	16
S	Soybeans	8986.094	9317.775	9.487083333	85251.82262	88398.50791	3.70%	3.78%	9
KC	Coffee	18477.47	18863.52	1.274541667	23550.30541	24042.34222	1.02%	1.03%	1
SB	Sugar	350467.6	356948.3	0.161391667	56562.55008	57608.48105	2.45%	2.47%	1
CC	Cocoa	4.49828	4.482378	3048.083333	13711.1323	13662.66168	0.59%	0.58%	-1
CT	Cotton	55730.3	56919.26	0.631041667	35168.1414	35918.4247	1.53%	1.54%	1
LH	Lean Hogs	87671.93	89422.62	0.693645833	60813.26894	62027.62777	2.64%	2.66%	2
LC	Live Cattle	92186.84	94811.31	1.252416667	115456.3349	118743.2648	5.01%	5.08%	7
FC	Feeder Cattle	21383.2	22425.74	1.5520625	33188.06285	34806.15009	1.44%	1.49%	5
CL	WTI Crude Oil	11568.56	12637.76	42.14416667	487547.3207	532607.8637	21.15%	22.80%	165
HO	Heating Oil	78754.85	71069.42	1.332925	104974.3084	94730.20665	4.55%	4.06%	-50
RB	RBOB Gasoline	84209.46	78841	1.382316667	116404.14	108983.2283	5.05%	4.67%	-38
LCO	Brent Crude Oil	9256.426	8679.141	44.37916667	410792.4722	385173.045	17.82%	16.49%	-133
LGO	Gas Oil	294.9689	286.6551	399.8958333	117956.8341	114632.1801	5.12%	4.91%	-21
NG	Natural Gas	31615.91	32577.49	2.378166667	75187.9033	77474.7008	3.26%	3.32%	6
MAL	Aluminum	47.09	48.692	1559.4375	73433.91188	75932.13075	3.19%	3.25%	7
MCU	Copper	19.1	19.68	4820	92062	94857.6	3.99%	4.06%	7
MNI	Nickel	1.516	1.658	9276.708333	14063.48983	15380.78242	0.61%	0.66%	5
MPB	Lead	9.484	9.894	1749.083333	16588.30633	17305.4305	0.72%	0.74%	2
MZN	Zinc	12.38	12.58	1854.583333	22959.74167	23330.65833	1.00%	1.00%	0
GC	Gold	81.79151	85.00658	1205.5	98599.66531	102475.4322	4.28%	4.39%	11
SI	Silver	752.9706	787.0504	16.17408333	12178.60923	12729.81876	0.53%	0.55%	2

2017 Sector Weight Comparison – Pro Forma

Sector	2016 Weight	2017 Weight	Difference (basis pts)
Energy	56.96%	56.24%	-72
Agriculture	19.64%	19.88%	24
Livestock	9.09%	9.23%	14
Industrial Metals	9.51%	9.71%	20
Precious Metals	4.81%	4.93%	13

- The Agriculture sector had the largest percentage increase due to the individual commodity percentage weight increases in Corn, Soybeans and Kansas Wheat.
- The Energy sector had the largest percentage decrease due to the large individual commodity percentage weight decreases in Brent Crude Oil and Heating Oil.

Open Interest Comparison

Symbol	Commodity	Aug. 2015 OI	Aug. 2016 OI	% Change
W	Chicago Wheat	337,934	389,869	15.37%
KW	Kansas City Wheat	165,794	207,162	24.95%
C	Corn	1,182,600	1,155,479	-2.29%
S	Soybeans	609,474	587,444	-3.61%
KC	Coffee	159,542	154,848	-2.94%
SB	Sugar	768,718	817,853	6.39%
CC	Cocoa	162,408	182,334	12.27%
CT	Cotton	170,975	212,347	24.20%
LH	Lean Hogs	173,202	192,431	11.10%
LC	Live Cattle	212,967	230,160	8.07%
FC	Feeder Cattle	32,882	34,511	4.95%
CL	WTI Crude Oil	1,593,460	1,694,126	6.32%
HO	Heating Oil	391,539	342,276	-12.58%
RB	RBOB Gasoline	375,212	366,336	-2.37%
LCO	Brent Crude Oil	1,919,729	2,166,947	12.88%
LGO	Gas Oil	787,182	802,710	1.97%
NG	Natural Gas	875,817	967,160	10.43%
MAL	Aluminum	1,099,283	929,434	-15.45%
MCU	Copper	409,506	438,154	7.00%
MNI	Nickel	283,935	311,944	9.86%
MPB	Lead	157,745	142,353	-9.76%
MZN	Zinc	384,676	391,038	1.65%
GC	Gold	399,568	504,732	26.32%
SI	Silver	144,795	166,041	14.67%
Total Open Interest		12,798,943	13,387,689	4.60%

Sources: CFTC & LME Exchange

CFTC Data for US futures (total long positions only)

CFTC data for ICE - Europe Exchange (total positions reported only)

Exchange data for LME (total positions)

Component Candidate Screening Review

CONTRACTS TESTED FOR INCLUSION

Soybean Oil	ICE NYH (RBOB) Gasoline (Monthly)
Soybean Meal	ICE Heating Oil
Hard Red Spring Wheat	Brent Oil
Brent Last Day Financial Futures	Robusta Coffee - 10 Tonne
Copper Futures (HG)	White Sugar
Henry Hub Natural Gas Last Day Financial Futures	Nonfat Dry Milk
E-Mini Crude Oil Futures	Platinum Futures
European Low Sulphur Gasoil Bullet Futures	Coal (API2)CIF ARA (ARGUS -McCloskey) Futures
Gasoline Euro-bob Oxy NEW Barges Futures	Palladium Futures
RBOB Gasoline Financial Futures (RL)	Chicago Ethanol (Platts) Futures
Natural Gas (Henry Hub) Penultimate Financial Futures	Coal (API4) FOB Richards Bay (ARGUS -McCloskey)
Oman Crude Oil	Tin
ICE WTI Crude Oil	

Component Candidate Screening Review (Cont.)

None of the candidates tested completely satisfy all of the components of the eligibility criteria:

RPDW: at least 1% for a Contract that is not included in S&P GSCI

TDVT: at least US\$ 15 billion for Contracts not represented in S&P GSCI
at least US\$ 30 billion for Contracts already represented in S&P GSCI

TQT: at least 25% for Contracts already represented in S&P GSCI

TVM Lower Level: 30 for Contracts not represented in S&P GSCI

TVM Upper Level: 200 for Contracts already represented in S&P GSCI

Thank you

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General

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