Prof. C. Droussiotis

LECTURE 2

Futures and Forwards – An Overview

E + marrie C + marrie + marr		Futures	Contracts	WSJ.co	m/comn	nodities	Walks As a strike Report (1995)	
$E \times nurret C = 10000 \ error state of the second state of the se$		Metal & Petro	leum Futures		Sec.		Contract Open High hilo Low Settle	Open Chg Interest
$E \times nurret C \rightarrow C + C + C + C + C + C + C + C + C +$		Open	Contract High hi lo Low	Settle	Chg	Open interest	Coffee (ICE-US)-37,500 lbs.; cents per lb.	-4.00 71.871
Expansion Call control into the term Call control int		Copper-High (C May 3.4515	MX)-25,000 lbs.; \$ per lb 3.5335 3.4460 3.5380 3.4260	3.5040	0.0345	981	Sept 180.90 183.50 176.50 177.35 Sugar-World (ICE-US)-112,000 lbs.; cents per lb.	-3.95 33,179
 Ly Mintal, Area 1994 10 10120 1992 00 10200 1992 00 10000 1992 00 1000 1992 00 1000 1992 00 1000 1992 00 1000 1992 00	Francie (5) -1	Gold (CMX)-100 to	roy oz.; \$ per troy oz. 1599 00 1584 50	1588.70	-3.20	167 648	July 20.47 20.66 20.30 20.38 Oct 20.80 20.98 20.68 20.73	09 324,397 07 167,052
For 23 1923.00	Ginne	Aug 1594.10 Dec 1599.50	1601.40 1587.00 1605.00 1592.20	1591.00 1595.10	-3.20 -3.20	110,360 46,265	Sugar-Domestic (ICE-US)-112,000 lbs.; cents per lb. July 30.35 30.35 30.35 30.35 30.35 Cont 20.45 20.45 20.45 20.45	30 2,845
 EXAMPLE 30/10 100000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10		Feb'13 1602.00 April 1597.00	1607.00 1593.20 1602.90 1597.00	1597.10 1599.20	-3.20 -3.20	18,802 12,365	Cotton (ICE-US)-50,000 lbs; cents per lb. Iuly 77 99 79 05 76 49 77 52	44 1,800
 Areg. 1942/29 (2012) Biskon 1942/29 (2012) Bisk		June 1599.00 miNY Gold (CMC	1606.90 1599.00 X) - 50 troy oz.; \$ per troy o	1601.30	-3.20	13,142	Dec 75.35 76.30 ¥ 73.75 74.57 Orange Juice (ICE-US)-15,000 lbs.: cents per lb.	64 74,953
Six 19822 19822 19823 <		Aug 1591.50 Oct 1602.00	1602.75 1590.00 1602.00 1602.00	1591.00	-3.25	2,208	July 103.80 110.40 101.75 106.80 Nov 106.00 112.25 106.00 111.05	4.60 15,320 4.90 4,186
Ame 0000 0.03.94 000.00 40.080 7.20 5.489 1.00 0.02.00 1.00 0.05.00 EXAMPLE 0.00 1.02.00		Dec 1593.25 Palladium (NYM	5 1593.25 1593.25 1 - 50 troy oz.; \$ par troy oz	1595.10	-3.15	99	Interest Rate Futures	21 5.5
EXAMPLE Abr 125200 12520 <		June 602.00 Platinum (NYM)) 619.50 600.80)-50 troy oz.; \$ per troy oz.	610.80	7.20	15,889	June 148-020 148-070 147-100 147-290	-13.0 652,001
EXAMPLE Shift and Called Action impression in the sector of the sect	Example 1	July 1457.90 Oct 1469.00	1473.20 1455.50 1472.60 1463.30	1461.50 1464.90	2.20 2.40	42,352 3,583	June 133-195 133-240 133-115 133-200 Sept 132-210 132-220 132-120 132-190	-6.0 1,856,309 -7.0 90,858
 EXAMPLE Construction of the sector of the sec	CAMARLE 3	June 28.655	000 troy oz.; \$ per troy oz. 5 28.775 28.060 28.955 28.060	28.305	-0.391	272	5 Yr. Treasury Notes (CBT)-\$100,000; pts 32nds of 10 June 124-002 124-035 123-282 124-027	0% 1,369,306
Spect 25:503 7:82:53 27:53 7:400 7:70 77:60 77:60 77:82:50 77:80		miNY Silver (C	MX) - 2500 troy oz.; \$ per 28.750 28.079	troy oz.	-0.394	405	Sept 123-235 123-255 123-187 123-247 2 Yr. Treasury Notes (CBT)-\$200,000; pts 32nds of 10 10 045 110 020 110 057 110 045	2 39,859 10%
 EXAMPLE 2017 12:001 2017 10:000 2017 10:000 2017 10:000 2017 10:000 2017 10:000 2017 10:0		Sept 28.550 Dec 28.800	28.550 7 28.263 28.800 28.800	28.375	-0.400 -0.397	3	30 Day Federal Funds (CBT)-\$5,000,000;100-daily:	avg. 54 367
Exponence 91,20	EXAMPI2(4)-	Crude Oil, Ligh June 91.27	t Sweet (NYM)-1,000 93.06 ¥ 90.84	bbls.; \$ per bt 92.57	il. 1.09	55,178	Oct 99.820 99.825 99.820 99.830 10 Yr. Int. Rate Swaps (CBT)-\$100,000; pts 32nds of 10	51,131 00%
EXAMPLE 52.50 94.45 9 12.80 12.80 14.80 10.87 1		Aug 91.71 Aug 91.79	93.35 = 91.12 93.62 = 91.44 93.62 = 91.44	92.86	1.06	304,446	June 119.219 119.422 119.188 119.313 Sept 118.547 118.906 118.547 118.656	234 8,379 250 50
Ethown E Heating OII No. 2 (2017) - 42000 pit Spread. 20180 2 2218 2 2218 2 2018 0 2018 0 2018 7 132 0 2018		Dec 92.50 Dec'13 91.55	94.45 ¥ 92.28 92.45 91.03	93.98	1.03	183,108 124,107	I Month Libor (CME)-\$3,000,000; ptsoi100% June 99.7500 99.7500 99.7500 99.7500 http://doi.org/10.00000000000000000000000000000000000	.0025 4,536
hybr 2.8322 2.8375 2.8644 0.002 7.132 See 1 0.006 0.93353 0.000 0.93353 0.000 0.93353 0.000 0.93353 0.000 0.93353 0.93353 0.9440 0.93169 0.9400 0.93200 0.92370 0.93353 0.9440 0.93169 0.9400 0.93200 0.92370 0.93200 0.92370 0.93353 0.9440 0.93169 0.9400 0.93200 0.92370 0.92370 0.92370 0.92370 0.92370 0.92370 0.92370 0.92370 0.92370 0.92370 0.92370	TIMO A D-1	Heating Oil No. June 2.8290	2(NYM)-42,000 gal.; \$ 2.8725 2.8255	per gal. 2.8603	.0303	58,261	Eurodollar (CME) \$1,000,000; pts of 100% June 99,5000 99,5175 99,5000 99,5125	.0125 961.312
Inter 2.882.0 2.980.0 2.990.0 2.980.0 2.990.0 2.980.0 2.990.0 2.980.0 2.990.0 2.990.0 2.990.0 2.990.0 2.990.0 2.990.0 2.990.0 2.990.0 2.990.0 2.990.0 2.990.0 2.990.0 2.990.0 2.990.0 2.990.0 3.990.0 3.990.0 3.990.0 3.990.0 3.990.0 3.990.0 3.990.0 3.990.0 3.990.0 3.990.0 3.990.0	Chund	July 2.8352 Gasoline-NYR	2 2.8778 2.8319 BOB (NYM)-42,000 ga	2.8654 L; \$ per gal.	.0302	71,332	Sept 99.4050 99.4400 99.4000 99.4300 Dec 99.3450 99.3800 99.3400 99.3700	.0300 939,353 .0300 969,697
Aug 2.827 2.843 2.869 2.864 2.660 1.259 1.250 1		July 2.8171	1 2.8710 2.8820 2.8710 2.8150	2.9401	.0506	65,195 93,135	June 13 99.3000 99.3350 99.2950 99.3300	.0250 688,979
Aug 2862 2266 2275 2294 -132 0630 12952 Gene 139525 139525 <td></td> <td>June 2.722 July 2.822</td> <td>2 2.743 2.589 2 2.824 2.669</td> <td>2.609</td> <td>133</td> <td>88,863 261,005</td> <td>Japaniese Yen (CME)-¥12,500,000; \$per 100¥ hune 1 2620 1 2550 1 2580 1 2604</td> <td>0046 142 464</td>		June 2.722 July 2.822	2 2.743 2.589 2 2.824 2.669	2.609	133	88,863 261,005	Japaniese Yen (CME)-¥12,500,000; \$per 100¥ hune 1 2620 1 2550 1 2580 1 2604	0046 142 464
Oct. 2.922 2.925 2.312 2.433 -1.31 12.42.923 Aime 9724 9804 0.000 1.25.004 Agriculture Futures Agriculture Futures Agriculture Futures File File 1.25.004 1.25.004 0.003 1.25.004 Law 628.25 644.50 628.25 633.00 -2.50 51.35.03 577.758 Section File 1.25.004<		Aug 2.862 Sept 2.885	2 2.866 2.715 5 2.889 2.748	2.734	132 130	96,309 139,522	Sept 1.2654 1.2664 1.2605 1.2618 - Canadian Dollar (CME)-CAD 100.000 \$ per CAD	.0047 1,139
Agriculture Futures Born of Control 5000 histories membra Born of Control 500		Oct 2.952 Jan'13 3.601	2 2.955 2.812 1 3.610 3.487	2.831	131 114	134,832 82,159	June .9784 .9832 .9752 .9804 Dec .9775 .9785 .9720 .9766	.0020 125,004 .0021 4,126
Example 2 July 10, 158,25 64450 22,75 33,00 -230 31,333 Sorias Prime (Det Cut 25,000 sector 15, 10,000 sector		Agriculture I	Futures	स्टर्भाव संवास इ.स. २९४ अ.स. इत्या	Sector Sector	100	British Pound (CME)-£62,500; \$per£ June 1.5809 1.5840 1.5777 1.5804 Sont 1.5790 1.5832 1.5772 1.5206	.0003 184,122
Ethanni (CETT) 2000 sell s per sell Sept 1.0680 1.0684 1.0624 1.0668 0.041 344.07 Aug 2.222 2.219 2.219 2.219 2.212 -00 577 Jane 791.7 9833 9957 9859 9957 9859 0003 134.675 Ontat GETT, 5.000 Lacentary ref. 30.00 372.00 2.00 3.017 Jane 70205 0.07265 0.07265 0.0726 </td <td>EXAMPLE(2)</td> <td>July 638.25 Dec 543.00</td> <td>5 644.50 628.75 0 549.50 534.75</td> <td>633.00 540.50</td> <td>-2.50 3.50</td> <td>513,939 377,538</td> <td>Swiss Franc (CME)-CHF 125,000; \$per CHF June 1.0641 1.0678 1.0598 1.0650</td> <td>.0041 67,821</td>	EXAMPLE(2)	July 638.25 Dec 543.00	5 644.50 628.75 0 549.50 534.75	633.00 540.50	-2.50 3.50	513,939 377,538	Swiss Franc (CME)-CHF 125,000; \$per CHF June 1.0641 1.0678 1.0598 1.0650	.0041 67,821
Aug 2.232 2.181 2.192 2.574 June 9373 9276 2883		Ethanol (CBT)-2 June 2.220	19,000 gal.; \$ per gal. 0 2.226 2.199	2.212	- 00	671	Sept 1.0680 1.0684 1.0624 1.0668	.0041 340
July 341,20 343,75 332,75 342,00 2.00 3.779 Marketin Free (UKE) 50.000, spec 1003,5 00055 133,357 Soyhama (UET) 5.000 hu, rentriper hu, 112,50 112,50 7.50 272,967 Euro (CEME) 5123,000,5 per (J133,007,98 00055 43,683 July 4139,00 1314,77 1293,62 136,50 140,50 140,77 Dec 367,00 372,70 366,10 360,00 3.60 44,320 Dec 314,47 512,60 50,92 0.00 136,00 57,864 July 40,930 422,00 136,00 3.60 44,320 128,00 128,00 128,00 128,00 128,00 101,5 8 4,777 Dec 314,00 1316,00 1543,00 3.60 44,320 116,00 6,00 25,50 100,00 112,00 128,00 128,00 128,00 128,00 128,00 128,00 124,00 135,10,00 142,409 135,10,00 142,409 129,10,130,00 124,100 130,00 124,100 130,00 124,100 130,00 124,100 130,00 </td <td></td> <td>Aug 2.232 Oats (CBT) - 5,000</td> <td>2 2.232 2.18 Dbu.; cents per bu.</td> <td>2.198</td> <td></td> <td>2,574</td> <td>June .9817 .9893 .9776 .9850 Sept .9744 .9808 .9714 .9777</td> <td>.0063 134,676 .0063 862</td>		Aug 2.232 Oats (CBT) - 5,000	2 2.232 2.18 Dbu.; cents per bu.	2.198		2,574	June .9817 .9893 .9776 .9850 Sept .9744 .9808 .9714 .9777	.0063 134,676 .0063 862
any with a fit 3 for 423 tho main family of 422 to a fit 3 for 3 for 272,967 Furro (CMED) + 623,000, 5 part 6 into 1,277,77,12826 1,2726 1,2726 1,2720 0,051 357,864 Sorybean Meal (CETT) 000 non fyer can 366,10 366,00 360 44,320 into 1,277,77,12826 1,2739 1,2802 0,050 5,713 Dec 367,00 372,70 366,10 366,00 360 44,320 into 1,277,77,12826 1,2790 0,051 357,864 Dec 367,00 372,70 366,10 366,00 360 44,320 into 1,277,77 1,282,00 into 1,277,77 1,2800 into 1,277,77 1,2800 into 1,277,77 into 2,272,72,72,72 into 1,277,77 </td <td></td> <td>July 341.00 Dec 350.00</td> <td>0 343.75 338.75 0 352.00 349.75</td> <td>5 342.00 5 352.00</td> <td>2.00</td> <td>8,379 3,017</td> <td>June</td> <td>00055 138,357 00055 48,488</td>		July 341.00 Dec 350.00	0 343.75 338.75 0 352.00 349.75	5 342.00 5 352.00	2.00	8,379 3,017	June	00055 138,357 00055 48,488
Soybean Meal 12617.100 tens Speron. July 4000 12250 415.50 416.50 -1.40 128,700 Soybean 011 (CBT) 5000 the centre pet b. July 50.44 51.16 50.25 00,92 60 191.481 Hurb 50.44 51.16 50.25 10,92 60 191.481 Hurb 50.44 51.16 50 154.00 1543.00 25.50 11,030 Sept 1345.00 1540.00 1545.00 1545.00 26.50 11,030 Sept 1345.00 1540.00 4702.77 729.25 9.22 105,311 Hurb 12355 14490 12312 1440 155 14,249 Hurb 12355 14490 12312 1440 155 14,249 Hurb 12355 14490 12312 1440 155 14,249 Hurb 12355 14490 12312 1440 155 24,19 Sept 12255 12400 130.00 142.425 12419 155 24,19 Sept 12255 12400 132.60 134.00 25,9 Hurb 12310 1340,40 1294.00 130.9,30 25 24,15 Sept 12255 12400 132.00 134.00 1294.00 130.9,30 25 24,9 Hurb 12310 1309.40 1294.00 130.9,30 25 24,75 4,75 Sept 12252 12400 132.52 135.50 40.00 786.00 -1.65 Hurb 12200 1316.00 11294.00 1309.30 25 24,75 4,75 Sept 12200 1316.00 11294.00 1309.30 25 24,75 4,29 Hurb 12200 132.00 150.228 115.50 10,00 -1.89 Hurb 12210 1309.40 1294.00 1309.30 25 24,75 42,95 Hurb 12200 152.228 123.65 120.00 -1.25 1294.07 1281.52 130.57 25,0 35 Hurb 12200 152.228 123.65 120.00 -1.25 1294.65 1281.57 25,0 35 Hurb 12200 152.228 123.65 120.00 -1.25 1294.65 1281.57 25,0 35 Hurb 12200 152.228 123.65 120.00 -1.25 1294.65 1281.57 25,0 35 Hurb 12200 152.228 123.65 120.00 -1.25 1294.65 1281.57 25,0 35 Hurb 12200 152.228 123.65 120.00 15,0 1281.25 139.00 -1.60 23.14 Hurb 1220,00 1220.00 15,0 1281.25 139.00 -1.25 1294.65 1281.57 25,0 35 Hurb 247.25 254.60 246.50 278.57 35,0 35 Hurb 247.25 254.60 246.50 278.57 35,0 36 Hurb 247.25 254.60 246.50 248.50 75,0 34 Hurb 1220.00 120.00 15,0 128.25 13,0 128.25 131.57 25 25,0 134.50 128.25 133.57 75 25 35 Sept 124.65 135.5 13.50 13.57 14		July 1413.75 Nov 1300.00	5 1423.00 14.; cents per bu. 5 1423.00 1408.50 1 1314 75 1293 2	1412.50	7.50	272,967	Euro (CME)-6125,000; \$ per 6 June 1.2777 1.2826 1.2726 1.2790	.0051 357,864
Dec 367,00 372.70 366,10 360,00 3.60 44,320 Differ		Soybean Meal July 419.90	(CBT)-100 tons; \$ per ton. 0 422.50 415.50	416.50	-1.40	128,709	Sept 1.2800 1.2838 1.2739 1.2802 Euro/Japanese Yen (ICE-US)-€125,000; ¥ per €	.0050 3,713
Joing 50,24 51,26 50,22 50,92 60 191,481 Entro/Swiss Franc (GE-US)-6123,000, CHF peter int int< int< int< int< int< int int int <		Dec 367.00 Soybean Oil (C)	0 372.70 366.10 BTJ-60,000 lbs.; cents per) 369.00 lb.	3.60	44,320	June 101.5 Euro/British Pound (ICE-US)-€125,000; £per €	5 702
Industrial A verse (CBT) 52000 cmc3 per cm Industrial A verse (CBT) 510 km/s July 1518.00 1574.500 1576.00 1568.00 25.00 2.650 2.650 Sept 1545.00 1570.00 hu: cents per bu. July 700.00 722.00 La 682.75 704.00 Dec 722.00 La 682.75 704.00 C 722.00 La 682.75 704.00 Dec 722.00 La cents per bu. July 700.00 722.00 La cents per bu. July 709.00 726.00 Process per bu. July 709.00 726.00 Process per bu. July 709.00 726.00 Process per bu. July 792.00 810.00 792.00 786.75 735.00 fs02.8 Sept 12235 12400 12245 12419 125 2.01 July 792.00 810.00 792.00 786.75 75.05 Sept 120.01 30.00 792.00 786.75 4.75 15,989 Mini S&P Sol (CME) 530 kindex July 120.1 210 2120 2131 12400 12245 12419 125 2.00 130.30 24.90 6.090 Sept 122.00 1316.00 12245 12419 125 2.010 Sept 122.00 1316.00 12245 12419 125 5.010 Sept 122.00 1316.00 12245 12419 125 5.010 Sept 122.00 1316.00 12245 12419 125 5.010 Sept 122.00 1316.00 12245 12419 125 5.010 1316.00 1316.00 12245 12410 125 5.010 1316.00 1316.00 12245 1245 1315.00 1316.00		July 50.44 Dec 51.44	4 51.16 50.29 4 52.15 51.20	50.92 51.91	.60 .60	191,481 84,678	Euro/Swiss Franc (ICE-US)-€125,000, CHF per € June	1.780
Wheat (GFT) - 5.00 /but senityper bu. U.J. Industrial Average (GFT) - \$10.x index July 702.00 722.00 746.00 722.70 722.02 722.02 722.02 722.02 722.02 722.02 722.02 722.02 722.02 722.02 722.02 722.00 746.00 722.02 72.02		July 1518.00 Sept 1545.00	0 1546.50 1516.00 1570.00 1545.00	1543.00	25.50	11,030	Index Futures	14 10(5 1979 -) (1972 - 815)
Dec 722.00 742.00 A 703.75 729.25 9.25 105,315 Hint DJ Industrial A Varage (CBT) \$5x index june 1235 12493 12235 12403 12245 12419 155 94,963 July 709.00 730.00 701.50 715.00 10.00 78,417 Sept 12235 12403 12245 12419 155 94,963 Wheat DPLSD 5000 bus cents per bu. 90.00 796,75 4.75 15,989 Sept 1010dex (CME) 520,010 las 1204.00 1315.70 24.00 255,319 Sept 788.00 807.00 798.00 796,75 4.75 15,989 Sept 1201.00 130.90 1237.52 1315.75 25.00 2.957,278 Gattle-Feader (CME) 50,000 lbs.; cents per lb. 915.000 152.875 15.500 155.100 152.875 3.558 Sept 1291.75 131.600 1287.25 1315.75 25.00 2.957,278 Aug 161.500 152.875 153.000 152.875 128,500 -7.25 69,986 Mini 1582 P Solicitation Mini 1582 P Solicitation 128,100 <t< td=""><td></td><td>Wheat (CBT)-5,0 July 700.00</td><td>000 bu; cents per bu. 0 722.00 🛦 682.75</td><td>5 704.00</td><td>8.75</td><td>220,925</td><td>DJ Industrial Average (CBT)-\$10 x index June 12344 12490 12312 12490</td><td>155 14,249</td></t<>		Wheat (CBT)-5,0 July 700.00	000 bu; cents per bu. 0 722.00 🛦 682.75	5 704.00	8.75	220,925	DJ Industrial Average (CBT)-\$10 x index June 12344 12490 12312 12490	155 14,249
July 709.00 701.00 715.00 10.00 784.17 SEP SOO Index (GME) \$290 x index 10.00 1294.00 1315.70 24.90 253.319 July 792.00 796.75 4.75 1.50 10.00 1292.00 1316.00 1294.00 1315.70 24.90 253.319 Sept 788.00 807.00 788.00 795.00 15.907 15.989 10.00 1316.00 1297.25 1315.75 24.90 6.909 Sept 788.00 807.00 788.00 795.00 151.875 5.558 Sept 1291.75 1316.00 1297.25 1315.75 25.00 2.997.278 Aug 161.500 159.075 159.100 -1.600 231.40 June 1297.75 1309.55 1281.57 25.00 2.997.278 Aug 161.500 161.500 159.075 159.100 -1.600 231.40 June 902.90 924.20 24.90 42.90 75.25 21.85 June 1220.075 120.425 118.875 75.50 69.986 June 2471.25 254.65		Dec 722.00 Wheat (KC)-5,00	0 746.00 A 703.75 0 bu.; cents per bu.	729,25	9.25	105,315	Mini DJ Industrial Average (CBT)-\$5× index June 12335 12493 12305 12490 Sent 12253 12400 12245 12419	155 94,963 155 2,419
Wheat (DPLS)-5,000 but, cents per bi. Sept 792,00 796,75 4,75 15,989 Sept 1291,00 1309,30 24,90 6,090 Sept 788,00 807,00 788,00 795,00 6,50 10,880 10,880 10,880 10,880 1291,75 1316,00 #1287,25 1315,75 25,00 2,957,278 42,955 Sept 1281,25 1309,20 24,90 42,957 42,955 Sept 1281,25 1309,20 24,90 42,957 42,955 Sept 1281,25 1309,20 24,90 42,957 42,955 Sept 1281,275 1316,705 159,100 -1,600 23,140 Mini 1526 PM iddage 400 (CME2, Si00, Undage 40, 224,20 22,00 104,119 June 122,225 122,425 118,800 -7,25 69,964 June 2471,25 2543,50 75.25 21,185 June 87,50 87,500 87,00 87,50 -7,25 48,602 Sept 247,12 2546,50 2465,0 2543,50 75,3 405,38 June 87,50 87,000 86,525 86,70 -7,25<		July 709.00 Dec 739.2	0 730.00 701.50 5 762.00 735.50) 715.00) 750.25	10.00 11.50	78,417 26,888	S&P 500 Index (CME)-\$250 x index June 1292.00 1316.00 1294.00 1315.70	24.90 253.319
Cattle-Facdar (2002) 50,000 / 152,025 120,000 / 152,000 / 152,000 / 152,000 / 152,000 / 152,000 / 152,000 / 152,000 / 152,000 / 152,000 / 152,025 120,75 / 155,100 / 162,000 / 152,025 / 24,75 / 24,295 May 152,000 152,225 151,500 / 152,075 / 155,100 / 152,075 / 155,100 / 168,00 / 725 / 35,58 Sept 124,75 / 130,900 / 899,40 / 924,20 / 22,90 / 104,119 Cattle-Live (CME)-40,000 lbs; cents per lb. June / 020,20 / 924,90 / 899,40 / 924,20 / 22,90 / 104,119 June / 120,075 / 120,425 / 120,450 / 120,800 - 1.125 / 129,641 Masdaq IOO (CME)-\$100 / index Hogs-Lean (CME)-40,000 lbs; cents per lb. June / 247,12 / 5246,00 / 2465,0 / 2543,50 / 75,25 / 21,185 Hogs-Lean (CME) 40,000 lbs; cents per lb. June / 247,12 / 5246,00 / 2465,0 / 2543,50 / 75,25 / 21,185 July 80,550 / 85,57 / 87,000 / 7501.525 / 500,0 / 750 / -1.525 / 500,0 / 750 / -1.525 / 500,0 / 750 / -1.525 / 500,0 / 750 / 0.512 / 0.513 / 0.512 / 0.512 / 0.513 / 0.512		July 792.00 Sent 788.00	5,000 bu; cents per bu. 0 810.00 792.00 1 807.00 788.00	796.75	4.75	15,989	Sept 1291.00 1309.40 1291.00 1309.30 Mini S&P 500 (CME)-\$50 x index	24.90 6,090
Aug 161.500 159.005 159.005 159.100 -1.000 23,140 Mini Sec Miceap AUD (CME)-\$100 xindex June 120.075 120.425 118.475 118.680 -7.25 69,986 June 20.20 24.00 28.90 24.90 24.90 24.20 22.09 104,119 June 120.075 120.425 118.450 118.680 -7.25 69,986 June 2471.25 2546.00 246.00 2543.50 75.25 21,188 Hogs-Lean (CME) 40000 B7.550 86.575 86.700 -7.75 48,602 Sept 2477.0 2537.5 2467.8 2543.5 75.3 405,138 June 87.500 88.575 87.000 87.00 87.00 47.00 83.05 246.70 253.60 75.3 405,138 July 290.00 290.00 288.57 87.700 -88 5960 Sept 747.0 73.40 742.30 76.20.00 17.80 88.88 Sept 290.00 290.00 288.77 -15.28 15.44 05 47.44 Mini Russell 10000 (Cattle-Feeder	(CME)-50,000 lbs.; cents 0 152,225 151 500	per lb. 151.875	.575	3.558	June 1291.75 1316.00 ¥ 1287.25 1315.75 Sept 1284.75 1309.50 1281.25 1309.25	25.00 2,957,278 24.75 42,955
June 120.075 120.425 118.800 725 69.986 June 2471.25 254.00 246.00 2543.50 75.25 21.185 Hogs-Learn (CME) +0.000 lbs, cents pert b. June 2471.25 254.65 2465.00 2543.50 75.25 21.185 July 88.550 85.575 87.000 -725 69.00 June 2471.25 254.65 2465.00 2543.50 75.25 21.185 July 88.550 85.575 87.000 -7.25 69.100 Finit Russell 2000 (CME)+\$200 kindsx June 2477.0 253.6.7 75.0 433.18 July 290.00 290.10 286.80 287.70 -80 59.66 Sept 74.80 742.00 762.00 17.70 438.883 Sept 290.60 291.10 288.70 289.40 -40 247.70 76.30 71.70 438.883 June 17.40 76.60 713.70 72.60 17.80 76.200 17.70 438.883 <t< td=""><td>Aug 161.500 Cattle-Live (CM</td><td>161.500 159.07 1E]-40,000 lbs.; cents per</td><td>5 159.100 lb.</td><td>-1.600</td><td>23,140</td><td>June 902.90 924.90 ¥ 899.40 924.20 Nasdag 100 (CME) \$100 * 899.40 924.20</td><td>22.90 104,119</td></t<>		Aug 161.500 Cattle-Live (CM	161.500 159.07 1E]-40,000 lbs.; cents per	5 159.100 lb.	-1.600	23,140	June 902.90 924.90 ¥ 899.40 924.20 Nasdag 100 (CME) \$100 * 899.40 924.20	22.90 104,119
Hogs-Learn (CME): 40,000 lbs.; cents per lb. June 87.500 86.525 86.700 725 48,602 58pt 247.0 2537.5 246.50 2543.5 75.3 405,130 Juny 88.550 88.575 87.000 -1.525 69,110 Mini Russell 2000 (rcc:-us)-\$100 kindex 75.0 430,833 Juny 290.00 290.00 286.700 287.70 80 5960 Sept 747.20 763.40 742.30 762.00 17.70 438,883 Sept 200,000 286.70 289.70 40 2,447 747.20 763.40 742.30 762.00 17.70 438,883 Milk (CME) 200,000 286.70 289.70 40 2,447 747.40 763.40 742.30 762.00 17.70 438,883 Milk (CME) 200,000 286.70 289.70 40 2,447 717.40 763.60 717.00 717.40 783.40 17.80 786.40 17.80 786.40 17.80 786.40 17.80 786.40 17.80 786.40 17.80 17.80		June 120.07 Aug 122.22	5 120.425 118.47 5 122.425 120.65	5 118.800 120.800	725 -1.125	. 69,986 129,641	June 2471.25 2546.00 2466.00 2543.50 Mini Nasdar 100 (CME) \$20 v indax	75.25 21,185
July 06,320 06,327 07,000 07,429 -1,225 09,110 Mini Russell 2000 (rCz-US)-\$100 x index June 1/2,20 438,883 July 290,00 290,00 286,802 287,70 -80 5960 5ept 746,80 742.20 782.00 17.80 438,883 July 290,00 290,00 288,70 289,40 -40 2,447 Mini Russell 1000 (rCz-US)-\$100 x index 17.80 868 Milk (CM2) 200,000 lbs., centsper lb. 15,25 15.16 15.22 .05 4691 June 717.40 726,00 13.40 17.833 June 15.35 15.47 15.28 15.44 .05 4,741 June 13.56 81.03 81.23 19 65,213 Gocond (C2-US)-10 motifictoms; Sperion. June 4,742 June 81.56 81.03 81.23 18 1,091 June 15.25 2,225 2,238 -35 76,116 35.6 81.51 81.42 81.58 18		Hogs-Lean (CM June 87.500	E) -40,000 lbs.; cents per 0 87.550 86.52	86.700	725	48,602	June 2472.5 2546.5 2465.0 2543.5 Sept 2477.0 2537.5 2467.8 2538.0	75.3 405,138 75.0 431
Sept 200.00 <td></td> <td>Lumber (CME)-</td> <td>0 00.272 87.000 110,000 bd. ft., \$ per 1,000 0 290.00 294.00</td> <td>bd. ft.</td> <td>-1.525</td> <td>5 040</td> <td>Mini Russell 2000 (ICE-US)-\$100 x index June 747.20 763.40 742.30 762.00</td> <td>17.70 438,883</td>		Lumber (CME)-	0 00.272 87.000 110,000 bd. ft., \$ per 1,000 0 290.00 294.00	bd. ft.	-1.525	5 040	Mini Russell 2000 (ICE-US)-\$100 x index June 747.20 763.40 742.30 762.00	17.70 438,883
May 15,16 15,25 15,16 15,22 .05 4,691 ULS, Dollar Index (ICE-US)-\$1,00 / 12,500 123,40 17,833 June 15,35 15,547 15,28 15,44 .05 4,741 June 81,30 81,56 81.03 81,23 19 65,213 Cocon (ICE-US)-10 motricions; \$perton. July 2,272 2,225 2,228 -35 76,116 Sept 81.61 81.91 81.42 81.58 18 1,091		Sept 290.60	0 291.10 288.70	289.40	-,40	2,447	Sept 746.80 746.80 742.50 758.00 Mini Russell 1000 (ICE-US)-\$100 x index https://doi.org/10.2000/1000 x index	12.40 12.033
Cocoa (ICE-US)-10 matric tons; \$per ton. July 2,270 2,275 2,225 2,238 -35 76,116 Sept 81.61 81.91 81.42 81.58 -1.8 1,091		May 15.10 June 15.3	6 15.25 15.10 5 15.47 15.20	5 15.22 3 15.44	.05 .05	4,691 4,741	U.S. Dollar Index (ICE-US)-\$1,000 x index June 81.30 81.56 & 81.03 81.22	19 65.213
	A.	Cocoa (ICE-US)- July 2,270	10 metric tons; \$ per ton. 0 2,275 2,221	2,238	-35	76,116	Sept 81.61 81.91 81.42 81.58	18 1,091

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Example 1

To see how futures and forwards work and how they might be useful, consider the portfolio diversification problems facing a farmer growing a single crop, let us say wheat. The entire planting season's revenue depends critically on the highly volatile crop price. The farmer can't easily diversify his position because virtually his entire wealth is tied in the crop. The miller who must purchase wheat for processing faces a portfolio problem that is the mirror image of the farmer's. He is subject to profit uncertainty because of **unpredictable future cost of the wheat**.

Both parties can reduce this source of risk if they enter into a **forward contract** calling for the farmer to deliver the wheat when harvested at a price agreed upon now, regardless of the market price at harvest time. No money needs to change hands at this time. The forward contract is simply a deferred-delivery sale of some asset with the sales price to be paid or received for delivery of the commodity. **The forward contract protects each party from future price fluctuations.**

THE FUTURES MARKET FORMALIZE AND STANDARDIZE FORWARD

CONTRACTING. Buyers and sellers do not have to rely on a chance matching of their interests; they can trade in centralized futures market (standardized contracts with size, grade of commodity, contract delivery dates) – this creates liquidity

- Future contracts (differ from forwards) call for daily settling up of any gains and loses on the contract in contrast, the forward contracts, no money changes hands until delivery date.
- In centralized market, buyers and sellers can trade through brokers without personally searching for trading partners

Basics:

- **Futures Price** (agreed upon price of a commodity at delivery)
- Delivery date (maturity date)
- Grades (for agriculture commodity set different grades..i.e. No 2 hard winter wheat or No1 soft red wheat)
- Delivery is also specified (warehouse) delivery rarely occurs instead parties to the contract much more commonly close out their positions before contract matures (reverse before maturity), taking gains or loses in cash.
 - Long Position (purchasing the commodity on delivery date)
 - Short position (commits to delivery of the contract maturity)

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Example 2

Corn – 5,000 bushels Price: cents per bushel Expiration dates July 2012

The July 2012 maturity corn contract opened during the day at a future price of 638.25 cents (\$6.38) per bushel. The highest during the day was 644.50 cents (\$6.44) and lowest 628.75 cents (\$6.29) and the settlement price was 633.00 cents (\$6.33) or 2.50 cents lower than the opening price. The open interest or the number of outstanding contracts was 513,939.

The trader holding the long position, that is, the person who will purchase the good, profits from price increases at maturity. Suppose that when the contract matures in July, the price of corn (spot price) turns out to be 6.4825 per bushel. The long position trader who entered the contract at the futures price of 6.3825 cents 5/22/2012 – earns a profit of 10 cents per bushel. The eventual price is 10 cents higher than the originally agreed-upon futures price. As each contract calls for delivery of 5,000 bushels – the profit to the long position equals 5,000 bushels x 0.10 = 500 per contract. The short position loses 10 cents per bushel. The short position's loss equals the long position's gain.

Profit for long = Spot price at maturity – Original futures price Profit to short = Original futures price – Spot price at maturity.

Existing Contracts

- Agriculture Futures
- Metals and Minerals
- Foreign Currencies
- Financial Futures (fixed Income and Equity indices)

History / Mechanics

- 10 years ago: "trading pit" for each contract voice and hands
- Electronic platform
 - Europe with Eurex
 - CBOT / BME Globex
- Clearinghouse once it's agreed seller and buyer settle through the clearinghouse provides liquidity



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- Marking to Market (The daily settlement of obligations on futures positions)
- Original Margin: Each trader establishes a margin account (both Long and short trader) backed by treasury bills/cash to make sure the cash is there. i.e. if the initial margin for corn is 10%, the trader must post (looking at the WSJ March 2012 prices) at 10% of 651.00 cents or 65.10 cents x 5,000 = \$3,255 per contract on the margin account.
- Maintenance margin / maintenance Margin: On a daily basis they debit/credit the account to maintain 5% cushion (this margin could be different than the original margin).
- **Convergence property:** The convergence of futures prices and spot prices at the maturity of the futures contract As a maturity contract calls for immediately delivery, the futures price on that day must equal the spot price.



Example 3 - Marking to Market and Future Contract Profits):

Assume the current futures price for silver for delivery five days from today is (June 2012 - \$28.305 per ounce). Suppose that over the next five days, the futures price evolves as follows:

Example 2

Daily Mark-to-Market - June 2012

	F	utures	F (lo	Profit ss)per	Proceeds x 5,000 ounces /		10%
Day		Price	0	unce	contract		Balance *
6/10/2012 Today 6/11/2012 6/12/2012 6/13/2012 6/14/2012 6/14/2012 6/15/2012 Delivery	\$\$\$\$\$	28.31 29.31 29.56 29.26 28.76 29.76	\$ \$ \$	1.00 0.25 (0.30) (0.50) 1.00 sum =	5,000.001,250.00(1,500.00)(2,500.00)5,000.007,250.00	Credit Credit Debit Debit Credit	14,152.50 19,152.50 20,402.50 18,902.50 16,402.50 21,402.50
			Cor	tract=	5,000	bushels	

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Cash Vs Actual Delivery

Cash Settlement: The cash value of the underlying asset (rather than the asset itself) is delivered to satisfy the contract (S&P index for example) – *delivering every stock from S&P will be impractical.*

FUTURES MARKET STRATEGIES -

Hedging & Speculation

Hedging and speculation are two polar uses for future markets. A speculation uses a futures contract to profit from movements in future prices, a hedger to protect against price movements.

Example 4

Consider an oil distribution planning to sell 100,000 barrels of oil in Mar 2012 that wishes to hedge against a possible decline in oil prices. Because each contract calls of 1,000 barrels, it would sell 100 contracts. Any decrease in prices would then generate a profit on the contracts that would offset the lower sales revenue from the oil.

Using the WSJ prices, suppose that the only three possible prices for oil Mar 2012 (stay at \$98.78 and up/down \$4 from there).

Example 4

		Oil Prices in July 2012					
		\$	88.86	\$	92.86	\$	96.86
Revenue from Oil Sales	100,000	8,	886,000	9,2	286,000		9,686,000
+ Profit form Futures	100,000		400,000		-		(400,000)
Total Proceeds		9,	286,000	9,2	286,000		9,286,000

Basis Risk and Hedging

The basis is the difference between the futures price and spot price.

The convergence property implies that

Sr - K = basis or K - Sr = 0

Basis Risk is the <u>risk</u> associated with imperfect <u>hedging</u> using <u>futures</u>. It could arise because of the difference between the asset whose price is to be hedged and the asset underlying the <u>derivative</u>, or because of a mismatch between the expiration date of the <u>futures</u> and the actual selling date of the asset.

Under these conditions, the <u>spot price</u> of the asset, and the futures price, do not converge on the expiration date of the future. The amount by which the two quantities differ measures the value of the basis risk. That is,

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Basis = Spot price of hedged asset - Futures price of contract

Example 5: Speculating on the basis:

Investor holding 100 ounces of gold, who is short of one gold futures contract. Suppose gold sells for \$1,621.00 an ounce, and the futures price for August delivery is \$1,591.00 an ounce (WSJ). Therefore, the basis is currently \$30 (\$1,621 - \$1,591). Tomorrow, the spot price might increase to \$1,631, while the futures price increases to \$1,596, so the basis narrows to \$35 (\$1,631 - \$1,596). The investor's gains and losses are as follows:

Gain on holdings of gold (per ounce):	\$1,631 - \$1,621= \$10
Loss on gold futures position (per ounce):	\$1,596 - 1,591 = \$5

An investor gains \$10 per ounce on the gold holdings, but loses \$5 an ounce on the short futures position. The net gain is the decrease in the basis, or \$5 an ounce.

Optimal Hedge Ratio:

The **Hedge Ratio** is the ratio of the size of the position taken in futures contracts to the size of the exposure

$$h = p. (\sigma Sr / \sigma K)$$

Example 6:

A company knows that it will buy 1 million gallons of jet fuel in three months. The standard deviation of the change in the price per gallon of jet fuel over a 3-month period is calculaed 0.032 (3.2%). The company chooses to hedge by buying futures contracts on heating oil. The sandard deviation of the change in the futures price over 3-month period is 0.040 (4.0%) and the coefficient of correlation between the 3-month change in the price of jet fuel and 3-month change in the futures price is 0.8. The optimal hedge ratio is herefore:

 $0.8 \ge (0.032 / 0.040) = 0.64.$

One heating oil futures contract is on 42,000 gallons. The company should therefore buy

0.64 x (1,000,000 / 42,000) = 15.2 or Contracts (~15 contracts)