Professor Crocker H. Liu Revised: March 8, 2009
Real Estate Capital Markets

Real Estate Swaps and Derivatives

Objective: The objective of this assignment is to familiarize students with real estate swaps and real estate derivatives. The development of derivatives in real estate, especially commercial real estate has been slow to develop although there have been several attempts that have failed to gain traction. For example, the Chicago Merchantile Exchange (CME) announced on September 6, 2006 that they were teaming with Global Real Analytics to launch U.S. Commercial Real Estate futures and options contracts based on the GRA Commercial Real Estate Indexes (CREX) to allow investors and speculators to protect or gain exposure to the $5.3 trillion U.S. commercial real estate market. The index was scheduled to begin trading in the first quarter of 2007. On Friday, November 28, 2008, the S&P/GRA Commercial Real Estate Futures were delisted from the CME.

Assignment: Download the real estate data from my website (recm_red2009.xls) and use the downloaded spreadsheet to answer the following questions. Please highlight your answers in yellow and turn in a hard copy of your results. ***This is an individual assignment***.

1. NCREIF Returns: (10 points) The National Council of Real Estate Investment Fiduciaries (NCREIF) is an industry association that provides real estate performance information to the institutional real estate investment community. The NCREIF Property Index (NPI) is used as an industry benchmark for returns on the underlying commercial real estate. A detailed breakdown of the income and total capital appreciation components as well as the total return for the NPI is provided in the "NCREIF Returns" worksheet. Using this data,

   a. NPI Quarterly Returns Chart: Prepare a line graph showing the co-movement of the income portion and the capital appreciation portion of the NCREIF return as well as the total return. Also calculate and report the mean and standard deviation of the 3 components using the AVERAGE and STDEV functions in Excel. Please discuss how stable the income portion of the NCREIF return is over time especially relative to the capital appreciation component.

   b. Calculation of Annual Returns: Using the "1b. Calc(Annual NCREIF Rtns)" worksheet, calculate the annual NCREIF returns. The formula to calculate returns using an index is $Return_T = (Index_T/Index_{T-1})-1$.

c. NPI Annual Returns Chart: Prepare a line graph showing the co-movement of the income portion and the capital appreciation portion of the NCREIF return as well as the total return using your answer from the ""1b. Calc(Annual NCREIF Rtns)" worksheet in part b above. Also calculate and report the mean and standard deviation of the 3 components using the AVERAGE and STDEV functions in Excel. Please discuss how stable the income portion of the NCREIF return is over time especially from 2001 onwards.

2. Illiquidity of Real Estate and the Swapping of CREF Cash Flows: (50 points) One strategy that some investment banks such as Morgan Stanley have proposed to CREF investors who wish to lessen their exposure in real estate but do not want to pay large transaction costs and do not want to turn a "paper" loss into a real loss through a sale of CREF units is to swap CREF returns for risk-free returns on either LIBOR or Treasury bills. Suppose that your firm, who holds units in a CREF, executes a real estate swap for a 3 month (90 day) Treasury bill. The swap is initiated in the fourth quarter of 2003; the real estate swap will last for 20 quarters ending in the fourth quarter of 2008.[1] The terms associated with the swap agreement are as follows:

Initial Appraised Value: $150,000,000
Discount (of Appraised Value): 15%
Length of Swap (in quarters): 20 quarters (from 2004 Quarter 1 until 2008 Quarter 4)
Spread over 3-month Treasury bill: .125%

where

Initial Notional Amount = Initial App Value * (100% - Discount of Appraised Value)

Discount Accretion Amount (per period) = (Initial Appraised Value * Discount of Appraised value)/Length of Swap

Discounted Initial Russell-NCREIF Capital Index Value =(Capital Index Val *(100%-Discount of Appraised value))

Number of Index Units = Notional Amount ÷ Discounted Capital Index Value

Discount Accretion (Percent %) = Discount ÷ Length of the Swap

Fill in the yellow highlighted areas in the Receiver[2] Template (the **2a. Swap05 (Recv Ppty CF** worksheet) and the Payer[3] Template (the **2b. Swap05 (Pays Ppty CF)**

[1]The question to consider here is how would the party who wants to participate in real estate (receiver of real estate cash flows) have fared over this time period.
[2]Receives Property Cash Flows
[3]Pays Property Cash Flows

worksheet)". The highlighted areas: 1) Show the net cash flows to Party A including all intermediate calculations on a spreadsheet, 2) Show the net cash flows to Party B including all intermediate calculations on a spreadsheet, and 3) Show the cash flows to the financial intermediary who set up the swap agreement including all intermediate calculations on a spreadsheet. Information on NCREIF Return values and Treasury Rates are located in the "NCREIF Returns" and "90 Day TBill (Qtrly)" worksheets. Is the swap a good deal for your firm? Was the swap, in hindsight, a good deal for the other party? Why or why not? If it is not a good deal, explain why it isn't. Plot out the NCREIF returns vs. 3-month Treasury bill.

3. NCREIF Swaps and Markit: (10 points) On January 2nd, 2008, Markit commenced acting as the calculation agent for Total Return Swaps on select NCREIF Property Indices. Markit publishes the closing levels of NCREIF Property Index swaps by 4:30 PM, every business day at

   http://markit.com/information/products/category/indices/NCREIF.html

   Analysts can use the information from Markit as one indicator of future commercial real estate performance. Assume that NCREIF income returns are expected to remain constant at a 5% ***annual*** rate over the next 5 years. Using the information provided in the "Markit" worksheet labed "3a. Imputed Price DecAdv" which was current as of the date that this case was written (March 2, 2009), calculate the expected (%) price decline in each year as well as the cumulative (%) price decline for the NCREIF National Index. Observe that the Mid Fix Rate (%)is the expected total return on the NCREIF Index for the appropriate time period. For example, the anticipated total return for a one year swap with a start date of December 2008 and an end date of December 2009 is -16.25%. Since we assume that the income portion of the total expected return remains constant at 5%, this implies that the capital appreciation portion of total return is equal to the Mid Fix Rate minus the Income Return (Mid Fix Rate = Expected Income Return + Anticipated Capital Appreciation). Please discuss what the market is anticipating in terms of real estate prices. Are real estate prices anticipated to turnaround in the near future? Please explain. Note: These anticipated price declines (in percentage terms) represent the derivatives brokers' guesses about what commercial real estate prices should be. Another caveat is that the NCREIF derivatives market is very thin and illiquid at present. Use a line graph to plot the anticipated NCREIF Price Decline over time (Column G in "3a. Imputed Price DecAdv" worksheet).

4. <u>S&P/Case Shiller Housing Futures and Price Discovery</u> (10 points): One of the benefits of housing futures according to the Chicago Mercantile Exchange (CME) is that it will stabilize the market in the long term. Like any futures contract, the goal is price discovery in the marketplace. The CME housing futures market is a tool to tell you where the market believes prices are going, to give the broader market a sense of price discovery. Using the worksheet "4. Housing Futures & Price Rev" together with the following files in the Appendix to this case

   Section46_Housing_Futures_And_Options_2009003.pdf
   Section46_Housing_Futures_And_Options_2009025.pdf

   obtained from

   http://www.cmegroup.com/tools-information/build-a-report.html?report=dailybulletin

   fill in columns C through L using the appropriate Settlement Price reported in the Appendix and then calculate the percentage price decline/advance forecasts for the various futures contracts available for the 10 cities and the composite of those 10 cities in columns N through V (I have filled in cell D5 and cell E5 as well as cell N5 and cell O5 as examples to make sure that each of you is on the right track). What can we infer about the "predicted" forward looking change in prices in various markets and the U.S. as a whole when we compare the first table - Change from CSI Index Oct-08 (1/6/09) with the second table - Change from CSI Index Nov-08 (2/6/2009)? Next, using http://www.papereconomy.com/CSI.aspx for the Composite index, select all futures contracts at the bottom of the page and then select the date range from 2005 until the present and copy and paste the resulting picture you're your report. What does this graph suggest about future housing expectations? Looking at the Daily price bulletins provided for January 6, 2009 and February 6, 2009 at the end of your case study, how many trades have there been for the various housing futures? To what extent can we use data on housing futures to infer future housing prices?

5. <u>Profit/Loss on MAY-09 CSI Contract</u> (10 points): Using the worksheet template "5. Profit Loss on May09 CSI", calculate the profit or loss on the May 2009 CSI Composite 10 cities contract. What is the dollar profit if the contract is purchased on December 31, 2008 and held through March 4, 2009? Does the investor receive any margin calls over this holding period? Remember that the contracts are marked to market at the end of each day. Unlike the stock market in which price fluctuations represent a paper profit or loss at the end of each day assuming that the stock is held, in the futures market, the end of each day represents an actual profit or loss. Assume that the investor purchased 10 CSI Composite May09 contracts at a price of $161 per contract. Initial and maintenance margin requirements for housing future contracts are reported in the "Margins (CME Housing)" worksheet while the "CME Housing Futures (Composite)" worksheet contains the Settlement Prices for the CSI Composite 10 cities contract.

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FINAL

FOR PRODUCTS THAT ARE TRADED IN BOTH REGULAR TRADING HOURS (RTH) AND ELECTRONIC TRADING HOURS (ETH) THE INFORMATION REPRESENTED ON THIS PAGE FOR OPENING RANGE, HIGH, LOW, CLOSING RANGE, SETTLEMENT PRICE AND VOLUME REPRESENTS RTH ACTIVITY ONLY. NOTE: LIFE OF CONTRACT HIGH AND LOW REPRESENTS BOTH RTH AND ETH. RTH VOLUME REFLECTS PIT TRADING, BLOCK TRADES AND CASH-FOR-FUTURES ONLY. ETH REPRESENTS GLOBEX VOLUME TRANSACTIONS FROM THE GLOBEX® ELECTRONIC SESSION ONLY. VOLUME OR OPEN INTEREST (BOTH BEFORE AND AFTER THE LAST DAY OF TRADING) MAY BE AFFECTED BY: CASH FOR FUTURES, SPREADS, AND PRIOR DAYS' CLEARED TRADES (OUT-TRADES), POSITION ADJUSTMENTS, OPTION EXERCISES, POSITIONS IN DELIVERY, OR POSITIONS IN A CASH SETTLEMENT CYCLE. PRODUCT LISTINGS REPRESENT CONTRACTS WITH PRICE/VOLUME ACTIVITY AND/OR HAVE ESTABLISHED OPEN INTEREST. PRODUCTS THAT ARE ELIGIBLE TO TRADE, BUT ARE INACTIVE, DO NOT APPEAR IN THIS REPORT. LEGEND: B=BID, A=ASK, N=NOMINAL, P=POST SETTLEMENT SESSION, #=NEW CONTRACT HIGH PRICE, *=NEW CONTRACT LOW PRICE, R=RECORD VOLUME OR OPEN INTEREST. SETTLEMENT PRICES ARE DETERMINED BY CME RULE 813. CAB= (CABINET TRANSACTION) - 1/2 TICK VALUE = $5.00 PRODUCT LISTINGS REPRESENT CONTRACTS WITH PRICE/VOLUME ACTIVITY AND/OR HAVE ESTABLISHED OPEN INTEREST. PRODUCTS ELIGIBLE TO TRADE BUT ARE INACTIVE DO NOT APPEAR IN THIS REPORT.
NOTE: EFFECTIVE BEGINNING MAY 1, THE EFP COLUMNS HAVE BEEN REDUCED TO TWO COLUMNS FOR MORE ACCURATE REPORTING. WE ARE CURRENTLY IN THE PLANNING PHASE TO PROVIDE THIS INFORMATION DOWN TO THE CONTRACT LEVEL IN A SEPARATE REPORT.

HOUSING AND REAL ESTATE FUTURES & OPTIONS CONTRACTS LAST TRADE DATES

EXPIRATION:	FEB09	MAY09	AUG09	NOV09
US HOUSING	02/23	05/26	08/31	11/30

HOUSING FUTURES

	OPEN RANGE	HIGH	LOW	CLOSING RANGE	SETT. PRICE & PT. CHGE		VOLUME TRADES CLEARED	OPEN INTEREST		--CONTRACT-- HIGH	LOW
CSI COMP FUT											
FEB09	----	----	----	----	162.20	+ UNCH	----	5	UNCH	172.00	160.80A
MAY09	----	----	----	----	161.00	+ UNCH	----	3	UNCH	165.00	153.20
NOV09	----	----	----	----	149.00	+ UNCH	----	5	UNCH	183.80	149.00
NOV10	----	----	----	----	142.00	+ UNCH	----	2	UNCH	189.00	142.00
NOV11	----	----	----	----	153.00	+ UNCH	----	2	UNCH	194.20	145.00
TOTAL CSI COMP FUT							0	17			
BOS HOUSE FUT											
NOV12	----	----	----	----	146.00	+ UNCH	----	3	UNCH	147.80B	146.00
TOTAL BOS HOUSE FUT							0	3			
CHI HOUSE FUT											
FEB09	----	----	----	----	141.80	+ UNCH	----	7	UNCH	149.00	132.80
TOTAL CHI HOUSE FUT							0	7			
DEN HOUSE FUT											
NOV11	----	----	----	----	120.00	+ UNCH	----	21	UNCH	121.60	119.00
TOTAL DEN HOUSE FUT							0	21			
LAV HOUSE FUT											
FEB09	----	----	----	----	135.00	+ UNCH	----	4	UNCH	140.60	135.00
NOV09	----	----	----	----	124.00	+ UNCH	----	2	UNCH	170.00	124.00A
NOV10	----	----	----	----	125.60	+ UNCH	----	2	UNCH	145.00	124.80A
MAY11	122.00	#122.00	*122.00	----	122.00	+ NEW	1	1	+ 1	122.00	122.00
NOV11	----	----	----	----	151.00	+ UNCH	----	2	UNCH	161.00	151.00A
NOV12	----	----	----	----	129.00	+ UNCH	----	15	UNCH	161.00	129.00A
TOTAL LAV HOUSE FUT							1	26			
LAX HOUSE FUT											
FEB09	----	----	----	----	171.20	+ UNCH	----	19	UNCH	172.40	165.00A
MAY09	----	----	----	----	160.40	+ UNCH	----	8	UNCH	161.60	158.00A
NOV10	----	----	----	----	144.00	+ UNCH	----	17	UNCH	225.00	144.00A
NOV12	----	----	----	----	156.00	+ UNCH	----	2	UNCH	164.00	156.00A
TOTAL LAX HOUSE FUT							0	46			
MIA HOUSE FUT											
MAY09	----	----	----	----	154.00	+ UNCH	----	2	UNCH	160.00	154.00A
MAY10	----	----	----	----	154.00	+ UNCH	----	1	UNCH	159.00	154.00A
NOV10	----	----	----	----	151.60	+ UNCH	----	4	UNCH	182.80	150.00A
TOTAL MIA HOUSE FUT							0	7			
NYM HOUSE FUT											
FEB09	----	----	----	----	183.80	+ UNCH	----	19	UNCH	188.00	182.20A
MAY09	----	----	----	----	175.60	+ UNCH	----	14	UNCH	187.00B	174.00
AUG09	----	----	----	----	170.00	+ UNCH	----	4	UNCH	172.00B	170.00
NOV09	----	----	----	----	169.00	+ UNCH	----	12	UNCH	183.40B	165.20
NOV10	----	----	----	----	164.00	+ UNCH	----	4	UNCH	183.20	163.80A
NOV12	----	----	----	----	166.00	+ UNCH	----	3	UNCH	171.00B	156.00
TOTAL NYM HOUSE FUT							0	56			
SDG HOUSE FUT											
FEB09	----	----	----	----	151.00	+ UNCH	----	17	UNCH	186.40	150.00
MAY09	----	----	----	----	140.00	+ UNCH	----	17	UNCH	182.80	140.00A
NOV12	----	----	----	----	145.00	+ UNCH	----	2	UNCH	150.00	145.00A
TOTAL SDG HOUSE FUT							0	36			
SFR HOUSE FUT											
FEB09	126.40	126.40	*126.40	----	126.40	- 60	1	47	UNCH	147.80	126.40
MAY09	----	----	*118.80A	----	118.80	- 20	----	15	UNCH	124.60	118.80A
NOV09	114.00	114.00	*114.00	----	114.00	- 200	1	3	+ 1	132.00	114.00
NOV10	----	----	----	----	121.40	+ UNCH	----	1	UNCH	130.40	121.40A
NOV12	----	----	----	----	126.60	+ UNCH	----	2	UNCH	155.00	125.00A
TOTAL SFR HOUSE FUT							2	68			
WDC HOUSE FUT											
FEB09	----	----	----	----	177.00	+ UNCH	----	4	UNCH	179.00	173.80
NOV09	----	----	----	----	169.00	+ UNCH	----	2	UNCH	169.80	169.00A
TOTAL WDC HOUSE FUT							0	6			

REAL ESTATE FUTURES

	OPEN RANGE	HIGH	LOW	CLOSING RANGE	SETT. PRICE & PT. CHGE		VOLUME TRADES CLEARED	OPEN INTEREST		--CONTRACT-- HIGH	LOW
CSI COMP FUT											
FEB09	----	----	----	----	162.20	+ UNCH	----	5	UNCH	172.00	160.80A
MAY09	----	----	----	----	161.00	+ UNCH	----	3	UNCH	165.00	153.20
NOV09	----	----	----	----	149.00	+ UNCH	----	5	UNCH	183.80	149.00
NOV10	----	----	----	----	142.00	+ UNCH	----	2	UNCH	189.00	142.00
NOV11	----	----	----	----	153.00	+ UNCH	----	2	UNCH	194.20	145.00
TOTAL CSI COMP FUT							0	17			
BOS HOUSE FUT											
NOV12	----	----	----	----	146.00	+ UNCH	----	3	UNCH	147.80B	146.00
TOTAL BOS HOUSE FUT							0	3			
CHI HOUSE FUT											
FEB09	----	----	----	----	141.80	+ UNCH	----	7	UNCH	149.00	132.80
TOTAL CHI HOUSE FUT							0	7			
DEN HOUSE FUT											
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MAY09	----	----	----	----	154.00	+ UNCH	----	2	UNCH	160.00	154.00A
MAY10	----	----	----	----	154.00	+ UNCH	----	1	UNCH	159.00	154.00A
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WDC HOUSE FUT												
FEB09	----	----	----	----	177.00	+	UNCH	----	4	UNCH	179.00	173.80
NOV09	----	----	----	----	169.00	+	UNCH	----	2	UNCH	169.80	169.00A
TOTAL WDC HOUSE FUT								0	6			

CASH-FOR-FUTURES (EFP'S), ALL OR NONE, DELIVERIES/EXERCISES, BLOCK TRADING

DELIVERY-------		OPTION-------		-------- BLOCK TRADING --------				--- CASH-FOR-FUTURES(EFP'S)---		---- AON'S ---	
CASH SETTLED	MONTH-TO-DATE	EXER-CISES	MONTH-TO-DATE	FUTURES TOTAL	MONTH-TO-DATE	OPTIONS TOTAL	MONTH-TO-DATE	DAILY TOTAL	MONTH-TO-DATE	TOTAL	MONTH-TO-DATE
---	---	---	---	---	---	---	---			---	---

INCLUDES ALL OPTIONS TOTAL:

COMMODITY ABBREVIATION TABLE

CEA/CEO CMRL REAL ESTATE APARTMENTS	CEC/CCO NAT COMP CMRL REAL ESTATE	CED/CDO DESERT MOUNTAIN WEST	CEE/CUO COMMERCIAL WAREHOUSE
CEL/CLO MIDWEST CMRCL REAL ESTATE	CEL/CLO RETAIL CMRCL REAL ESTATE	CEN/CNO NORTHWEST CMRCL REAL ESTATE	CEO/CFO OFFICE CMRCL REAL ESTATE
CES/CTO MID-ATLANTIC SOUTH CMRCL RE	CES/CTO PACIFIC WEST CMRCL REAL EST	BOO BOS HOUSE CALL	BOO BOS HOUSE PUT
CHO CHI HOUSE CALL	CHO CHI HOUSE PUT	CSO CSI COMP CALL	CSO CSI COMP PUT
DNO DEN HOUSE CALL	DNO DEN HOUSE PUT	LVO LAV HOUSE CALL	LVO LAV HOUSE PUT
LXO LAX HOUSE CALL	LXO LAX HOUSE PUT	MIO MIA HOUSE CALL	MIO MIA HOUSE PUT
NYO NYM HOUSE CALL	NYO NYM HOUSE PUT	SDO SDG HOUSE CALL	SDO SDG HOUSE PUT
SFO SFR HOUSE CALL	SFO SFR HOUSE PUT	WDO WDC HOUSE CALL	WDO WDC HOUSE PUT

HOUSING AND REAL ESTATE OPTIONS ON FUTURES

ELIGIBLE OPTIONS SERIES (CALLS & PUTS) FOR TRADING: TUE, JAN 06

	FEB09	MAY09	AUG09	NOV09
CHO				137.0-145.0

HOUSING OPTIONS ON FUTURES

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HOUSING AND REAL ESTATE FUTURES & OPTIONS CONTRACTS LAST TRADE DATES

EXPIRATION:	FEB09	MAY09	AUG09	NOV09	FEB10
US HOUSING	02/23	05/26	08/31	11/30	02/22

HOUSING FUTURES

	OPEN RANGE	HIGH	LOW	CLOSING RANGE	SETT. PRICE	& PT. CHGE	VOLUME TRADES CLEARED	OPEN INTEREST		--CONTRACT-- HIGH	LOW
CSI COMP FUT											
FEB09	----	----	----	----	162.20	+ UNCH	----	5	UNCH	172.00	160.80A
MAY09	----	----	----	----	157.60	+ UNCH	----	3	UNCH	165.00	153.20
NOV09	----	----	----	----	148.60	+ UNCH	----	5	UNCH	183.80	148.60A
NOV10	----	----	----	----	142.00	+ UNCH	----	2	UNCH	189.00	142.00
NOV11	----	----	----	----	145.00	+ UNCH	----	2	UNCH	194.20	145.00
TOTAL CSI COMP FUT							0	17			
BOS HOUSE FUT											
NOV12	----	----	----	----	146.00	+ UNCH	----	3	UNCH	147.80B	146.00
TOTAL BOS HOUSE FUT							0	3			
CHI HOUSE FUT											
FEB09	----	----	----	----	139.80	+ UNCH	----	7	UNCH	149.00	132.80
TOTAL CHI HOUSE FUT							0	7			
DEN HOUSE FUT											
NOV11	----	----	----	----	120.00	+ UNCH	----	21	UNCH	121.60	119.00
TOTAL DEN HOUSE FUT							0	21			
LAV HOUSE FUT											
FEB09	----	----	----	----	134.20	+ UNCH	----	4	UNCH	140.60	134.20A
NOV09	----	----	----	----	123.00	+ UNCH	----	2	UNCH	170.00	123.00A
NOV10	----	----	----	----	124.60	+ UNCH	----	2	UNCH	145.00	124.60A
MAY11	----	----	----	----	122.00	+ UNCH	----	1	UNCH	122.00	122.00
NOV11	----	----	----	----	150.00	+ UNCH	----	2	UNCH	161.00	150.00A
NOV12	----	----	----	----	129.00	+ UNCH	----	15	UNCH	161.00	129.00A
TOTAL LAV HOUSE FUT							0	26			
LAX HOUSE FUT											
FEB09	----	----	----	----	171.40	+ UNCH	----	21	UNCH	172.40	165.00A
MAY09	----	----	----	----	160.40	+ UNCH	----	8	UNCH	161.60	158.00A
NOV10	----	----	----	----	144.00	+ UNCH	----	17	UNCH	225.00	144.00A
NOV12	----	----	----	----	155.80	+ UNCH	----	3	UNCH	164.00	155.80A
TOTAL LAX HOUSE FUT							0	49			
MIA HOUSE FUT											
MAY09	----	----	----	----	154.00	+ UNCH	----	2	UNCH	160.00	154.00A
MAY10	----	----	----	----	154.00	+ UNCH	----	1	UNCH	159.00	154.00A
NOV10	----	----	----	----	151.40	+ UNCH	----	4	UNCH	182.80	150.00A
TOTAL MIA HOUSE FUT							0	7			
NYM HOUSE FUT											
FEB09	----	----	----	----	183.40	+ UNCH	----	20	UNCH	188.00	182.20A
MAY09	----	----	----	----	174.00	+ UNCH	----	14	UNCH	187.00B	174.00
AUG09	----	----	----	----	169.00	+ UNCH	----	4	UNCH	172.00B	169.00A
NOV09	----	----	----	----	158.00	+ UNCH	----	14	UNCH	183.40B	155.00
NOV10	----	----	----	----	138.00	+ UNCH	----	3	UNCH	183.20	135.00
NOV12	----	----	----	----	150.00	+ UNCH	----	3	UNCH	171.00B	150.00
TOTAL NYM HOUSE FUT							0	58			
SDG HOUSE FUT											
FEB09	----	----	----	----	150.80	+ UNCH	----	15	UNCH	186.40	150.00
MAY09	----	----	----	----	140.00	+ UNCH	----	17	UNCH	182.80	140.00A
NOV12	----	----	----	----	144.00	+ UNCH	----	2	UNCH	150.00	144.00A
TOTAL SDG HOUSE FUT							0	34			
SFR HOUSE FUT											
FEB09	----	----	----	----	130.20	+ UNCH	----	34	UNCH	147.80	126.40
MAY09	----	----	----	----	118.80	+ UNCH	----	15	UNCH	124.60	118.80A
NOV09	----	----	----	----	114.00	+ UNCH	----	3	UNCH	132.00	114.00
NOV10	----	----	----	----	119.00	+ UNCH	----	1	UNCH	130.40	119.00A
NOV12	----	----	----	----	126.60	+ UNCH	----	2	UNCH	155.00	125.00A
TOTAL SFR HOUSE FUT							0	55			
WDC HOUSE FUT											
FEB09	----	----	----	----	176.80	+ UNCH	----	5	UNCH	179.00	173.80
NOV09	----	----	----	----	169.00	+ UNCH	----	2	UNCH	169.80	169.00A
TOTAL WDC HOUSE FUT							0	7			

REAL ESTATE FUTURES

	OPEN RANGE	HIGH	LOW	CLOSING RANGE	SETT. PRICE	& PT. CHGE	VOLUME TRADES CLEARED	OPEN INTEREST		--CONTRACT-- HIGH	LOW
CSI COMP FUT											
FEB09	----	----	----	----	162.20	+ UNCH	----	5	UNCH	172.00	160.80A
MAY09	----	----	----	----	157.60	+ UNCH	----	3	UNCH	165.00	153.20
NOV09	----	----	----	----	148.60	+ UNCH	----	5	UNCH	183.80	148.60A
NOV10	----	----	----	----	142.00	+ UNCH	----	2	UNCH	189.00	142.00
NOV11	----	----	----	----	145.00	+ UNCH	----	2	UNCH	194.20	145.00
TOTAL CSI COMP FUT							0	17			
BOS HOUSE FUT											
NOV12	----	----	----	----	146.00	+ UNCH	----	3	UNCH	147.80B	146.00
TOTAL BOS HOUSE FUT							0	3			
CHI HOUSE FUT											
FEB09	----	----	----	----	139.80	+ UNCH	----	7	UNCH	149.00	132.80
TOTAL CHI HOUSE FUT							0	7			
DEN HOUSE FUT											
NOV11	----	----	----	----	120.00	+ UNCH	----	21	UNCH	121.60	119.00
TOTAL DEN HOUSE FUT							0	21			
LAV HOUSE FUT											
FEB09	----	----	----	----	134.20	+ UNCH	----	4	UNCH	140.60	134.20A
NOV09	----	----	----	----	123.00	+ UNCH	----	2	UNCH	170.00	123.00A
NOV10	----	----	----	----	124.60	+ UNCH	----	2	UNCH	145.00	124.60A
MAY11	----	----	----	----	122.00	+ UNCH	----	1	UNCH	122.00	122.00
NOV11	----	----	----	----	150.00	+ UNCH	----	2	UNCH	161.00	150.00A
NOV12	----	----	----	----	129.00	+ UNCH	----	15	UNCH	161.00	129.00A
TOTAL LAV HOUSE FUT							0	26			
LAX HOUSE FUT											
FEB09	----	----	----	----	171.40	+ UNCH	----	21	UNCH	172.40	165.00A
MAY09	----	----	----	----	160.40	+ UNCH	----	8	UNCH	161.60	158.00A
NOV10	----	----	----	----	144.00	+ UNCH	----	17	UNCH	225.00	144.00A
NOV12	----	----	----	----	155.80	+ UNCH	----	3	UNCH	164.00	155.80A
TOTAL LAX HOUSE FUT							0	49			
MIA HOUSE FUT											
MAY09	----	----	----	----	154.00	+ UNCH	----	2	UNCH	160.00	154.00A
MAY10	----	----	----	----	154.00	+ UNCH	----	1	UNCH	159.00	154.00A
NOV10	----	----	----	----	151.40	+ UNCH	----	4	UNCH	182.80	150.00A
TOTAL MIA HOUSE FUT							0	7			
NYM HOUSE FUT											
FEB09	----	----	----	----	183.40	+ UNCH	----	20	UNCH	188.00	182.20A
MAY09	----	----	----	----	174.00	+ UNCH	----	14	UNCH	187.00B	174.00
AUG09	----	----	----	----	169.00	+ UNCH	----	4	UNCH	172.00B	169.00A
NOV09	----	----	----	----	158.00	+ UNCH	----	14	UNCH	183.40B	155.00
NOV10	----	----	----	----	138.00	+ UNCH	----	3	UNCH	183.20	135.00
NOV12	----	----	----	----	150.00	+ UNCH	----	3	UNCH	171.00B	150.00
TOTAL NYM HOUSE FUT							0	58			
SDG HOUSE FUT											
FEB09	----	----	----	----	150.80	+ UNCH	----	15	UNCH	186.40	150.00
MAY09	----	----	----	----	140.00	+ UNCH	----	17	UNCH	182.80	140.00A
NOV12	----	----	----	----	144.00	+ UNCH	----	2	UNCH	150.00	144.00A
TOTAL SDG HOUSE FUT							0	34			
SFR HOUSE FUT											
FEB09	----	----	----	----	130.20	+ UNCH	----	34	UNCH	147.80	126.40
MAY09	----	----	----	----	118.80	+ UNCH	----	15	UNCH	124.60	118.80A
NOV09	----	----	----	----	114.00	+ UNCH	----	3	UNCH	132.00	114.00
NOV10	----	----	----	----	119.00	+ UNCH	----	1	UNCH	130.40	119.00A
NOV12	----	----	----	----	126.60	+ UNCH	----	2	UNCH	155.00	125.00A
TOTAL SFR HOUSE FUT							0	55			

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FINAL

WDC HOUSE FUT

FEB09	----	----	----	----	176.80 +	UNCH	----	5	UNCH	179.00	173.80
NOV09	----	----	----	----	169.00 +	UNCH	----	2	UNCH	169.80	169.00A
TOTAL WDC HOUSE FUT							0	7			

CASH-FOR-FUTURES (EFP'S), ALL OR NONE, DELIVERIES/EXERCISES, BLOCK TRADING

DELIVERY-------		OPTION-------		-------- BLOCK TRADING --------				--- CASH-FOR-FUTURES(EFP'S)---		---- AON'S ---	
CASH SETTLED	MONTH-TO-DATE	EXER-CISES	MONTH-TO-DATE	FUTURES TOTAL	MONTH-TO-DATE	OPTIONS TOTAL	MONTH-TO-DATE	DAILY TOTAL	MONTH-TO-DATE	TOTAL	MONTH-TO-DATE
---	---	---	---	---	---	---	---			---	---

INCLUDES ALL OPTIONS TOTAL:

COMMODITY ABBREVIATION TABLE

CEA/CEO CMRL REAL ESTATE APARTMENTS	CEC/CCO NAT COMP CMRL REAL ESTATE	CED/CDO DESERT MOUNTAIN WEST	CEE/CUO COMMERCIAL WAREHOUSE
CEL/CLO MIDWEST CMRCL REAL ESTATE	CEL/CLO RETAIL CMRCL REAL ESTATE	CEN/CNO NORTHWEST CMRCL REAL ESTATE	CEO/CFO OFFICE CMRCL REAL ESTATE
CES/CTO MID-ATLANTIC SOUTH CMRCL RE	CES/CTO PACIFIC WEST CMRCL REAL EST	BOO BOS HOUSE CALL	BOO BOS HOUSE PUT
CHO CHI HOUSE CALL	CHO CHI HOUSE PUT	CSO CSI COMP CALL	CSO CSI COMP PUT
DNO DEN HOUSE CALL	DNO DEN HOUSE PUT	LVO LAV HOUSE CALL	LVO LAV HOUSE PUT
LXO LAX HOUSE CALL	LXO LAX HOUSE PUT	MIO MIA HOUSE CALL	MIO MIA HOUSE PUT
NYO NYM HOUSE CALL	NYO NYM HOUSE PUT	SDO SDG HOUSE CALL	SDO SDG HOUSE PUT
SFO SFR HOUSE CALL	SFO SFR HOUSE PUT	WDO WDC HOUSE CALL	WDO WDC HOUSE PUT

HOUSING AND REAL ESTATE OPTIONS ON FUTURES

ELIGIBLE OPTIONS SERIES (CALLS & PUTS) FOR TRADING: FRI, FEB 06

	FEB09	MAY09	AUG09	NOV09	FEB10
CHO				137.0-145.0	

HOUSING OPTIONS ON FUTURES