

CME S&P Case Shiller Futures

September 2019 Review



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Overview

Objective

- The purpose of this monthly report is to compile information from a variety of sources into one place, at a point in time, to facilitate the understanding, analysis, awareness, and hopefully trading of the CME Case Shiller Home Price futures (and options) and other housing derivative products. Feel free to contact me if you have an ideas for an outright trade, calendar spread, option or inter-city theme.

Market Color/Discussion

- Resources: www.homepricefutures.com
- Market Updates: Twitter @HomePriceFuture
- LinkedIn: There is a CME Case Shiller home price futures group, but I use Twitter and blogs more often.
- Note: Almost all of the bid/ask quotes that are used here are my record of end-of-trading day prices, and thus may differ from CME closes and quotes, which are tallied an hour earlier.
- I use CUS and HCI interchangeably for the 10-city index. Different trading platforms use different symbols. Sorry for any confusion.
- While my long-term interest has been on CME Case Shiller home price index futures, my sense is that there may be demand for hedging products for other regions. See <https://www.homepricefutures.com/hphf>



Table of Contents

Page/ Content

- 4- Summary Observations
- 5- Price Changes –last month (tallied by region and expiration)
- 6- Prices Changes (across 11 contracts)
- 7- Bid/Ask spreads
- 8- Trading volume: Month/ YTD
- 9- Open Interest
- 10-2019 Year-End “Projections” (Feb 2020 contract)
- 11-Regional Calendar Spreads: Nov ’19 v Nov ’20 contracts
- 12-Candle graph for all regions across 2019-22 contracts
- 13-Calendar Spread Markets: 10-city index contract, Nov ’19-’23
- 14-Intercity Spread Quotes (10-city contract v 10 regions) Feb ’21
- 15-Indicative Put Option Quotes
- 16-Disclosure issues



Observations for Sept 2019

- **Trading/Quotes/Spreads/Activity:**
 - There were 18 futures contracts traded during Sept 2019, across 4 expirations, and 4 regions (HCI (10-city), BOS, NYM and SFR). (page 8).
 - No options have traded since the 7 lots in June.
 - Prices were mixed – up modestly higher across all regions, but slightly lower in LAX, SRR and WDC.
 - Bid/ask spreads were slightly wider in front contracts/ narrower in longer-dated contracts. (page 5).
 - Third-party activity was very quiet with most activity (surprise!) in the first half of the month.
 - Only four expirations (X19, G20, X20 and X22) have open interest (OI) (page 9). I believe that on any product w/ low volume concentrating interest on fewer choices, improves limited liquidity. As such, I rarely post quotes for K21, X21, K22, X23, except for 10-city index contracts.
 - Trading started in the G21 (Feb '21) contract which should promote discussion of HPA for 2020. (I'll add G21 as the 5th expiration to target.
 - BOS , NYM and SFR are the only regions with > 10 lots traded in 2019.
 - Four regions have no OI (DEN, LAX, MIA, and SDG). I'd be happy to facilitate trades in those regions.
 - I continue to tout OTC home price index agreements on other regions/ home price indices. See www.homepricefutures.com/HPHF for details



Price Changes/ Sept 30 v Aug 30

- Closes were modestly higher across most regions (except LAX, SFR and WDC) and all expirations.
- Shorter maturity bid/ask spreads widened, while longer-dated expirations were slightly tighter.

	Bid	Ask	Δ		Change*		
	Δ	Δ			Bid	Ask	
CUS	6.2	-2.4	8.6	X19	1.2	3.6	-2.4
BOS	4.8	3.6	1.2	G20	1.4	1.8	-0.4
CHI	0.8	0.6	0.2	K20	2.0	5.0	-3.0
DEN	1.0	1.4	-0.4	Q20	4.0	-0.2	4.2
LAV	9.8	6.4	3.4	X20	5.2	0.2	5.0
LAX	-6.6	-8.2	1.6	G21	0.0	0.0	0.0
MIA	4.0	3.0	1.0	K21	1.0	-0.2	1.2
NYM	-0.4	2.0	-2.4	X21	4.4	1.2	3.2
SDG	7.8	6.8	1.0	K22	1.0	-0.4	1.4
SFR	-1.6	-0.4	-1.2	X22	4.6	-0.4	5.0
WDC	-1.0	-3.4	2.4	X23	0.0	-1.2	1.2
	24.8	9.4	15.4		24.8	9.4	15.4

*Change -only for 2-sided mkts



Price Changes/ Sept 30 v Aug 30

	Bid	Ask	Bid Δ	Ask Δ
HCIY	230.74			
HCIX19	231.6	232.4	0.4	0.0
HCIG20	230.8	232.0	0.4	0.0
HCIK20	231.2	233.0	0.6	0.4
HCIQ20	233.2	234.6	1.0	0.0
HCIX20	234.0	234.8	0.8	-0.2
HCIG21	233.2	234.2		
HCIK21	233.4	235.2	1.0	-0.2
HCIX21	235.4	238.2	0.4	-0.2
HCIK22	235.2	239.6	1.0	-0.4
HCIX22	237.4	240.2	0.6	-0.6
HCIX23	238.6	242.8	0.0	-1.2

	Bid	Ask	Bid Δ	Ask Δ
BOSY	224.58			
BOSX19	225.6	227.8	0.8	1.0
BOSG20	224.6	227.4	0.6	0.8
BOSK20	225.0	228.2	0.8	1.0
BOSQ20	228.4	232.4	0.8	0.0
BOSX20	228.8	231.8	0.8	0.2
BOSG21	228.0	231.2		
BOSK21	227.2			
BOSX21	230.6	236.4	0.8	0.0
BOSK22				
BOSX22	233.6	240.0	0.2	0.6
BOSX23				

	Bid	Ask	Bid Δ	Ask Δ
CHIY	146.99			
CHIX19	147.0	148.6	0.0	0.6
CHIG20	145.6	147.6	0.0	0.2
CHIK20	145.8	148.2	0.0	0.6
CHIQ20	147.2	149.8	0.2	-0.2
CHIX20	148.0	150.0	0.2	-0.2
CHIG21	146.6	149.6		
CHIK21				
CHIX21	148.2	152.4	0.2	-0.2
CHIK22				
CHIX22	148.8	153.0	0.2	-0.2
CHIX23				

*- These prices are my best effort to collect end-of-day data and are not actual closing CME bids and offers.

	Bid	Ask	Bid Δ	Ask Δ
DENY	223.78			
DENX19	224.0	225.8	0.0	0.0
DENG20	223.4	225.4	0.0	-0.2
DENK20	223.6	226.4	0.0	0.0
DENQ20	226.4	230.4	0.4	0.0
DENX20	227.8	230.4	0.8	0.0
DENG21	227.0	230.0		
DENK21				
DENX21	229.4	235.0	0.2	0.4
DENK22				
DENX22	231.2	238.6	-0.4	1.2
DENX23				

	Bid	Ask	Bid Δ	Ask Δ
LAVY	194.81			
LAVX19	195.6	197.0	1.4	0.8
LAVG20	195.2	197.2	1.4	0.8
LAVK20	195.6	197.8	1.4	0.8
LAVQ20	199.0	202.4	1.4	1.4
LAVX20	199.6	201.8	1.4	0.6
LAVG21	198.8	201.8		
LAVK21				
LAVX21	201.6	206.6	1.4	1.0
LAVK22				
LAVX22	203.6	210.0	1.4	1.0
LAVX23				

	Bid	Ask	Bid Δ	Ask Δ
LAXY	286.18			
LAXX19	286.4	288.4	-1.2	-0.6
LAXG20	285.8	288.2	-1.2	-0.8
LAXK20	286.0	289.0	-1.0	-0.4
LAXQ20	287.4	290.8	-0.8	-1.0
LAXX20	287.8	290.4	-0.8	-1.0
LAXG21	287.0	290.0		
LAXK21				
LAXX21	289.0	294.0	-0.6	-1.0
LAXK22				
LAXX22	290.6	294.0	-1.0	-3.4
LAXX23				

	Bid	Ask	Bid Δ	Ask Δ
MIAY	244.09			
MIAX19	244.4	246.2	0.4	1.0
MIAG20	243.6	246.0	0.4	1.0
MIAK20	244.2	247.0	0.6	1.2
MIAQ20	245.8	248.6	0.6	-0.4
MIAX20	246.8	248.8	0.6	0.2
MIAG21	246.0	249.0		
MIAK21		250.0		
MIAX21	248.4	252.8	0.8	-0.2
MIAK22				
MIAX22	250.0	256.2	0.6	0.2
MIAX23				

	Bid	Ask	Bid Δ	Ask Δ
NYMY	200.57			
NYMX19	200.8	202.6	-0.4	0.2
NYMG20	200.4	202.0	0.0	-0.2
NYMK20	200.0	202.8	-0.4	0.2
NYMQ20	201.6	205.0	-0.2	0.2
NYMX20	202.2	205.2	0.0	0.4
NYMG21	201.6	204.6		
NYMK21				
NYMX21	203.4	208.6	0.0	0.8
NYMK22				
NYMX22	205.8	210.4	0.6	0.4
NYMX23				

	Bid	Ask	Bid Δ	Ask Δ
SDGY	263.58			
SDGX19	263.0	265.0	0.8	1.0
SDGG20	262.4	264.8	0.8	0.8
SDGK20	262.8	265.8	1.0	1.2
SDGQ20	264.2	267.6	1.2	1.0
SDGX20	265.4	267.8	1.6	1.0
SDGG21	264.6	267.6		
SDGK21	264.0			
SDGX21	266.2	271.6	1.0	1.0
SDGK22	265.2			
SDGX22	268.8	274.4	1.4	0.8
SDGX23				

	Bid	Ask	Bid Δ	Ask Δ
SFRY	270.21			
SFRX19	270.2	272.2	-0.6	0.2
SFRG20	269.4	271.8	-0.6	0.0
SFRK20	269.8	272.8	-0.6	0.2
SFRQ20	271.2	274.6	-0.6	-0.8
SFRX20	272.0	274.4	-0.2	-0.2
SFRG21	271.4	274.6		
SFRK21				
SFRX21	273.2	277.4	0.2	0.2
SFRK22				
SFRX22	275.6	281.0	0.8	0.0
SFRX23				

	Bid	Ask	Bid Δ	Ask Δ
WDCY	234.65			
WDCX19	235.0	236.8	-0.4	-0.6
WDCG20	234.4	236.6	-0.4	-0.6
WDCK20	234.8	237.8	-0.4	-0.2
WDCQ20	238.6	242.4	0.0	-0.4
WDCX20	239.4	242.4	0.0	-0.6
WDCG21	238.6	241.8		
WDCK21				
WDCX21	241.8	247.4	0.0	-0.6
WDCK22				
WDCX22	244.2	250.6	0.2	-0.4
WDCX23				



Bid/Ask Spreads

- Tightest two bid/ask spreads (by expiration) in green/ widest two in red.
- Bid/ask spreads:
 - Bid/ask spreads tightened primarily in shorter-dated expirations.
 - Average bid/ask spread of 1.7 points for front contract (Nov '19) is about average, with two months to run. In the past, I've tried to drive this to ~1.0 but am now more focused on longer-dated contracts, which are better suited for hedging/speculation.
 - As such, average bid/ask for X20 (w/ ~15 months to run) of 2.4 points is much tighter than average reflecting role as benchmark expiration.
 - I'm trying to steer interest to G20 and G21 contracts to spur 2019 and 2010 HPA discussions.

BID/ASK Spread													Bid/Ask Spreads			
													Avg	Narrow	Wide	
		CUS	BOS	CHI	DEN	LAV	LAX	MIA	NYM	SDG	SFR	WDC				
Nov '19	X19	0.8	2.2	1.6	1.8	1.4	2.0	1.8	1.8	2.0	2.0	1.8	X19	1.7	0.8	2.2
Feb '20	G20	1.2	2.8	2.0	2.0	2.0	2.4	2.4	1.6	2.4	2.4	2.2	G20	2.1	1.2	2.8
May '20	K20	1.8	3.2	2.4	2.8	2.2	3.0	2.8	2.8	3.0	3.0	3.0	K20	2.7	1.8	3.2
Aug '20	Q20	1.4	4.0	2.6	4.0	3.4	3.4	2.8	3.4	3.4	3.4	3.8	Q20	3.2	1.4	4.0
Nov '20	X20	0.8	3.0	2.0	2.6	2.2	2.6	2.0	3.0	2.4	2.4	3.0	X20	2.4	0.8	3.0
Feb '21	G21	1.0	3.2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.2	3.2	G21	2.9	1.0	3.2
May '21	K21	1.8											K21	1.8	1.8	1.8
Nov '21	X21	2.8	5.8	4.2	5.6	5.0	5.0	4.4	5.2	5.4	4.2	5.6	X21	4.8	2.8	5.8
May '21	K22	4.4											K22	4.4	4.4	4.4
Nov '22	X22	2.8	6.4	4.2	7.4	6.4	3.4	6.2	4.6	5.6	5.4	6.4	X22	5.3	2.8	7.4
Nov '23	X23	4.2											X23	4.2	4.2	4.2



Trading Activity: Sept/ 2019 YTD

- There were 18 trades in Sept across 4 expirations, and 4 regions.
- For the first time I can recall, more trading occurred in the first half of the month than the second (when CS #'s are released.)
- BOS, NYM and SFR are the regional contracts with the highest YTD volume. 3rd-party quotes are concentrated in those regions.

CME Case Shiller Trading 2019					
Futures					
Contract	Sept 18	YTD 108	Region	Sept 18	YTD 108
G19		1	HCI	3	27
K19		11	BOS	6	17
Q19		10	CHI	0	4
X19	5	20	DEN	0	2
G20	1	6	LAV	0	2
K20	0	0	LAX	0	5
Q20	0	0	MIA	0	1
X20	8	35	NYM	5	19
G21	0	0	SDG	0	4
K21	0	0	SFR	4	24
Q21	0	0	WDC	0	2
X21	0	0	TBA		1
X22	4	24			
X23	0	0			
TBA		1			



Open Interest (OI)

- OI rose from 45 to 53.
- Average years-to-expiration shortened slightly to 1.8 years
- There are 4 regions with no OI (DEN, LAX, MIA and SDG). I'm very eager to do a trade in all of these.
- By contrast, I like that there are only 4 expirations with OI as hedgers can more easily see where there's interest. (I'll tout Feb '21 (G21) as the 5th place to look.)

Futures Open Interest -a/o												9/30/2019	*current month -estimated
Contract	BOS	CHI	DEN	HCI	LAV	LAX	MIA	NYM	SDG	SFR	WDC	Total	
Nov 19	4			0				3		1		8	
Feb 20								6				6	
May 20												0	
Aug 20												0	
Nov 20		2		4	2					8		16	
Feb 21												0	
May 21												0	
Nov 21												0	
May 22												0	
Nov 22	10							4		7	2	23	
Nov 23												0	
SUM	14	2	0	4	2	0	0	13	0	16	2	53	

Average Expiration (yrs) 1.80
 November Expiration 89%
Open Interest

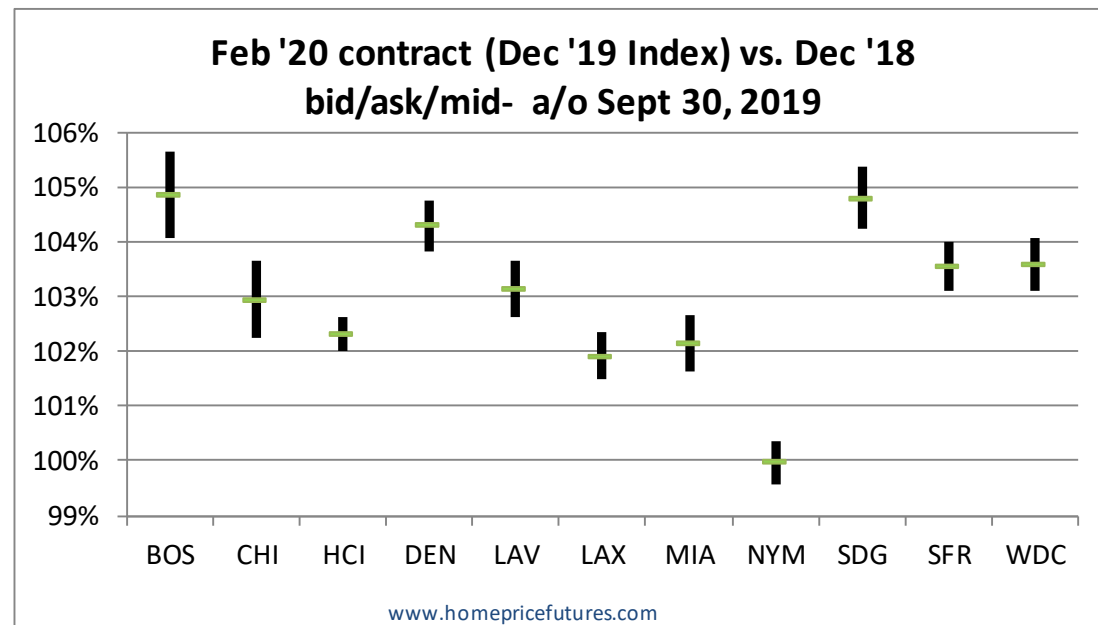
	Futures					
	2014	2015	2016	2017	2018	2019
Jan	89	63	44	53	36	
Feb	86	57	37	54	37	
Mar	95	64	37	66	33	56
Apr	107	71	51	69	40	59
May	88	57	42	48	35	45
June	88	58	43	51	39	45
July	89	58			44	51
Aug	77	49	36	61	48	45
Sept	78		42	45	47	53
Oct	85	52	46	51	49	
Nov	54	35	38	34	32	
Dec	57	40	41	34	37	

	Options					
	2014	2015	2016	2017	2018	2019
				18	17	0
				0	2	0
				6	2	0
			18	6	2	0
35		18	0	2	0	
35		18	0	2	7	
35		18	0	2	7	
35		18	10	2	7	
35		18	17	2	7	
35		18	17	2		
0		18	17	0		
		18	17	0		



One-year forward markets~ implied HPA?

- Bars show bid/ask spread expressed as % of Dec '18 index values.
- CUS futures prices consistent with 2.9% gains for 2019.
- BOS, SDG are priced for strongest gains/ NYM for weakest.
- Implied gains for 2019 are flat to lower vs. 2018 in all regions, except SDG and WDC.



Mid E2019	4.8%	2.9%	2.3%	4.3%	3.1%	1.9%	2.1%	0.0%	4.8%	3.6%	3.6%
Actual:2018	5.2%	2.9%	3.6%	5.5%	11.4%	3.7%	5.2%	2.9%	2.2%	3.4%	2.7%
E(2019) v 2018	94%	103%	65%	78%	28%	52%	41%	-1%	218%	103%	134%



Regional G20/G21 Calendar Spreads

- Note: with launch of Feb '21 (G21) contract, I've switched calendar spread focus to G20/G21 as it might be useful for 2020 HPA discussions.
- I sense that forward contracts clear at a discount to expectations, so some adjustments to "Implied HPA" are in order.

Spot	Outright Markets/ spot	Calendar Spreads:\$			Calendar Spreads: Implied HPA			Last 12 %	Bid/Ask			
		Bid	Ask	Mid	Bid	Mid	Ask					
HCI 230.74	HCIG20	230.8	232.0	231.4	-3.2	-2.3	-2.2	1.4%	1.0%	1.0%	1.6%	1.0
	HCIG21	233.2	234.2	233.7								
BOS 224.58	BOSG20	224.6	227.4	226.0	-4.6	-3.6	-3.4	2.0%	1.6%	1.5%	3.9%	1.2
	BOSG21	228.0	231.2	229.6								
CHI 146.99	CHIG20	145.6	147.6	146.6	-2.2	-1.5	-0.8	1.5%	1.0%	0.5%	1.6%	1.4
	CHIG21	146.6	149.6	148.1								
DEN 223.78	DENG20	223.4	225.4	224.4	-4.6	-4.1	-3.6	2.0%	1.8%	1.6%	3.1%	1.0
	DENG21	227.0	230.0	228.5								
LAV 194.81	LAVG20	195.2	197.2	196.2	-4.8	-4.1	-3.4	2.4%	2.1%	1.7%	4.7%	1.4
	LAVG21	198.8	201.8	200.3								
LAX 286.18	LAXG20	285.8	288.2	287.0	-2.6	-1.5	-1.2	0.9%	0.5%	0.4%	1.1%	1.4
	LAXG21	287.0	290.0	288.5								
MIA 244.09	MIAG20	243.6	246.0	244.8	-3.2	-2.7	-2.2	1.3%	1.1%	0.9%	2.7%	1.0
	MIAG21	246.0	249.0	247.5								
NYM 200.57	NYMG20	200.4	202.0	201.2	-2.6	-1.9	-1.2	1.3%	0.9%	0.6%	0.9%	1.4
	NYMG21	201.6	204.6	203.1								
SDG 263.58	SDGG20	262.4	264.8	263.6	-3.0	-2.5	-2.2	1.1%	0.9%	0.8%	2.0%	0.8
	SDGG21	264.6	267.6	266.1								
SFR 270.21	SFRG20	269.4	271.8	270.6	-3.4	-2.4	-2.0	1.3%	0.9%	0.7%	0.2%	1.4
	SFRG21	271.4	274.6	273.0								
WDC 234.65	WDCG20	234.4	236.6	235.5	-5.2	-4.7	-3.8	2.2%	2.0%	1.6%	2.7%	1.4
	WDCG21	238.6	241.8	240.2								

*-See Oct 4, 2016 blog <http://www.homepricefutures.com/?p=3902> for more detailed explanation of Calendar spreads.
 -Calendar spreads (orange/green) converted into % HPA change (right), which tend to bracket mid/mid-market-implied YOY HPA.
 -Spreads quoted front contract vs. back, so higher forward prices =negative #'s

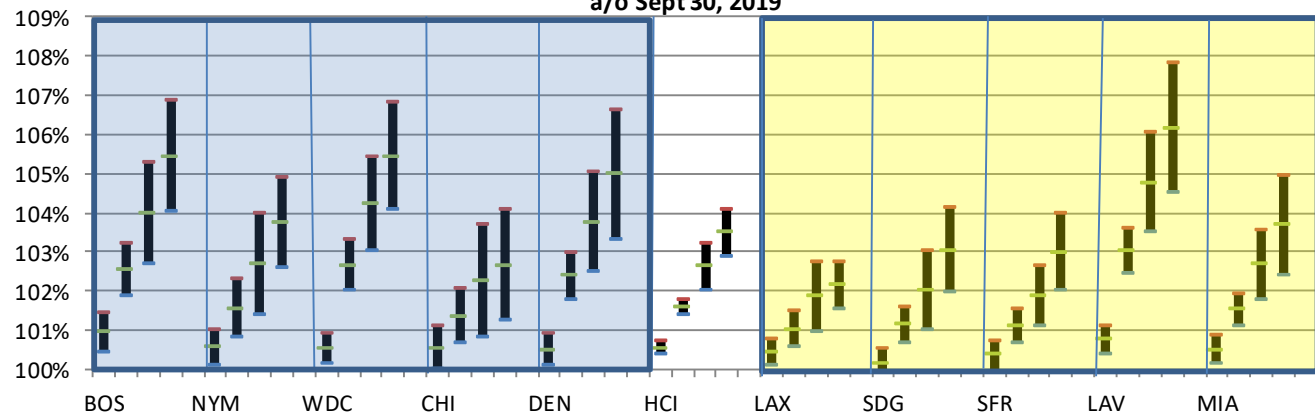


Nov '19-'22 Contracts -across regions

- Height of bars reflects bid/ask spread expressed as percent of spot market and are denominated as cumulative price gains vs spot.
- Comparison of Nov v Nov vastly reduces influence of seasonal issues.
- Illustrates levels suggestive of:
 - higher HPA in BOS, DEN, LAV and WDC vs. LAX, NYM (>50% of CS 10-city index).

CME Case Shiller futures as % of CS Spot index

Nov '19, '20, '21 and '22 contracts showing bid/ask/mid
a/o Sept 30, 2019



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Comparison of mid/mid-market levels

	BOS	NYM	WDC	CHI	DEN	HCI	LAX	SDG	SFR	LAV	MIA
Nov '19/'20	1.76%	1.28%	2.36%	0.94%	2.04%	1.03%	0.69%	1.06%	0.81%	2.44%	1.06%
Nov '20/'21	1.98%	1.66%	2.06%	1.60%	2.00%	1.45%	1.24%	1.42%	1.09%	2.38%	1.61%
Nov '21/'22	1.52%	0.86%	1.29%	0.39%	1.53%	0.84%	0.00%	1.03%	1.30%	1.65%	1.34%

*- bar graphs reflect when 2-sided markets are quoted



Calendar Spread Markets: YOY/HPA

- Calendar spread quotes (top) converted into % HPA change (below), which “tend” to bracket mid/mid-market-implied YOY HPA.
- Mid price is front vs back (so negative number = higher forward prices).
- Calendar spreads are a) a way of playing the pace of home price changes, and b) a very useful tool for having one quote populate multiple markets.
- Available for other regions upon request.

Outright Markets				Calendar Spreads											
	Bid	Ask	Mid	X20			X21			X22			X23		
				Bid	Mid	Ask	Bid	Mid	Ask	Bid	Mid	Ask	Bid	Mid	Ask
HCI	230.74														
HCIX19	231.6	232.4	232.0	-3.2	-2.4	-2.0	-6.6	-4.8	-3.4	-8.6	-6.8	-5.2	#VALUE!	-8.7	#VALUE!
HCIX20	234.0	234.8	234.4				-3.4	-2.4	-1.4	-5.4	-4.4	-3.4	-8.0	-6.3	-4.6
HCIX21	235.4	238.2	236.8							-3.6	-2.0	-1.4	#VALUE!	-3.9	#VALUE!
HCIX22	237.4	240.2	238.8										-3.6	-1.9	-1.2
HCIX23	238.6	242.8	240.7												
				Annualized % Change											
HCIX19				1.4%	1.0%	0.9%	1.4%	1.0%	0.7%	1.2%	1.0%	0.7%	na	0.9%	na
HCIX20							1.5%	1.0%	0.6%	1.1%	0.9%	0.7%	1.1%	0.9%	0.6%
HCIX21										1.5%	0.8%	0.6%	na	0.8%	na
HCIX22													1.5%	0.8%	0.5%
HCIX23															

Quote is front contract relative to back so -4.4 X19 bid is X19 bid 4.4 points below X20 contract offered for sale.

See March 7, 2014 blog for review of calendar spreads for explanation - <http://www.homepricefutures.com/?p=3020>

www.homepricefutures.com



Inter-City (IC) G21 Spreads

- A note: I've interpreted IC \$-spreads to implied gains vs. spot. Negative % indicate regional contract priced to outperform 10-city contract (HCI).
- Note #2 –I've switched focus from X20 to G21 (but spreads can be posted for any expiration)*.
- IC contracts priced consistent with BOS, DEN, LAV, WDC outperforming HCI, with LAX, SDG underperforming, and CHI, MIA, LAX and NYM, neutral.
- Regional IC spreads (e.g. LAX v SDG) may also be quoted (but not shown).

-Showing IC spreads where HCI contract is one side. Numbers (percentages) represent my calculation of difference in gain in one forward price vs. current spot, to same calculation for the second region. (e.g. -2.4%/-1.0% in HCI/BOS → Buyer looking for HCI to underperform BOS by Nov '20 expiration by 1.0%/seller willing to sell BOS at implied gains of 2.4% (relative to HCI).

See Sept 28, 2016 blog <http://www.homepricefutures.com/?p=3882> re IC spreads.

Also <http://www.homepricefutures.com/?p=3359>, and <http://www.homepricefutures.com/?p=3318> (1/6/15) for more detailed explanations

	Index	Spot	Exp	InterCity		Diff
				Bid	Ask	
Front	HCI	230.74	G21	3.0	5.2	2.2
Back	BOS	224.58				
				-1.4%	-0.5%	
Front	HCI	230.74	G21	84.6	87.2	2.6
Back	CHI	146.99				
				-0.3%	1.5%	
Front	HCI	230.74	G21	4.0	6.6	2.6
Back	DEN	223.78				
				-1.4%	-0.2%	
Front	HCI	230.74	G21	32.4	35.0	2.6
Back	LAV	194.81				
				-2.1%	-0.8%	
Front	HCI	230.74	G21	-56.2	-53.2	3.0
Back	LAX	286.18				
				0.0%	1.1%	
Front	HCI	230.74	G21	-14.8	-12.4	2.4
Back	MIA	244.09				
				-0.5%	0.5%	
Front	HCI	230.74	G21	29.4	31.8	2.4
Back	NYM	200.57				
				-0.6%	0.6%	
Front	HCI	230.74	G21	-33.4	-30.4	3.0
Back	SDG	263.58				
				0.0%	1.1%	
Front	HCI	230.74	G21	-40.4	-37.6	2.8
Back	SFR	270.21				
				-0.1%	0.9%	
Front	HCI	230.74	G21	-8.0	-5.2	2.8
Back	WDC	234.65				
				-1.7%	-0.5%	



Options/ Puts/ Strike ~ Spot

- CME put options for Feb '20 and Feb '21 contracts (that will settle on 2019 and 2020 year-end indices) are my focus
- Other inquiries are possible, as puts/calls can be created on any 5-point interval, on any region, for any expiration.
- Option strategies (e.g. vol plays, bear/bull spreads, calendar spreads etc.) can be arranged.
- 7 puts traded in June in HCI, MIA contracts.

Expiration: 2/28/2020		a/o: 1-Oct-19			
		Puts			Ask as %
		Strike	Bid	Ask	Spot
HCIG20	CS 10-city	230	2.3	4.3	1.5%
BOSG20	Boston	215	1.1	3.2	1.3%
CHIG20	Chicago	145	1.6	3.3	1.9%
DENG20	Denver	215	1.2	3.6	1.4%
LAVG20	Las Vegas	190	1.7	4.7	1.9%
LAXG20	Los Angeles	280	1.9	4.8	1.6%
MIAG20	Miami	240	2.1	4.1	1.6%
NYMG20	New York	200	2.2	4.7	1.9%
SDGG20	San Diego	255	1.9	4.9	1.6%
SFRG20	San Francisco	270	4.5	8.3	2.7%
WDCG20	Washinton, DC	230	1.6	3.9	1.6%

Expiration: 2/28/2021		a/o: 1-Oct-19			
		Puts			Ask as %
		Strike	Bid	Ask	Spot
HCIG21	CS 10-city	230	4.0	7.0	3.1%
BOSG21	Boston	225	4.5	9.0	4.0%
CHIG21	Chicago	145	3.0	6.0	4.1%
DENG21	Denver	225	5.0	9.1	4.3%
LAVG21	Las Vegas	195	4.5	9.0	4.7%
LAXG21	Los Angeles	285	6.0	10.0	4.1%
MIAG21	Miami	245	5.1	9.4	4.0%
NYMG21	New York	200	5.0	8.0	4.2%
SDGG21	San Diego	260	6.0	10.8	4.3%
SFRG21	San Francisco	270	8.0	14.0	5.6%
WDCG21	Washinton, DC	235	4.6	9.0	4.0%



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