Strategies for NIM Preservation

Investments, Loans, Funding and Hedging

October 2019

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STIFEL | Fixed Income Capital Markets

- ***Fed Funds Easing Cycle***
- Investment Portfolio Considerations
- HTM Reclassification
- Deleverage Considerations
- Releverage Considerations
- Hedging Applications
- Whole Loan Market Update
- Regulatory & Accounting Update
- LIBOR Transition

Fed Funds Futures ease from September 2018 levels

- September 2018 Fed Funds futures projected a 2.50-2.75% rate range for September 2019

Current Implied Probabilities | 3) Add/Remove Rates

Dates ● Meeting ○ Calculation | Calculated 09/28/2018 | Based on rate 2.00-2.25

Meeting	Hike Prob	Cut Prob	2-2.25	2.25-2.5	2.5-2.75	2.75-3	3-3.25	Fwd Rate
11/08/2018	2.7%	0.0%	97.3%	2.7%	0.0%	0.0%	0.0%	2.18
12/19/2018	71.3%	0.0%	28.7%	69.3%	1.9%	0.0%	0.0%	2.36
01/30/2019	72.4%	0.0%	27.6%	67.7%	4.7%	0.1%	0.0%	2.38
03/20/2019	88.8%	0.0%	11.2%	43.9%	42.0%	2.8%	0.0%	2.53
05/01/2019	90.3%	0.0%	9.7%	39.5%	42.2%	8.1%	0.4%	2.57
06/19/2019	94.7%	0.0%	5.3%	26.1%	41.0%	23.5%	3.9%	2.68
07/31/2019	95.1%	0.0%	4.9%	24.2%	39.7%	25.1%	5.6%	2.70
09/18/2019	96.5%	0.0%	3.5%	18.9%	35.4%	29.1%	11.0%	2.77
10/30/2019	96.7%	0.0%	3.3%	17.9%	34.4%	29.5%	12.1%	2.79

(1) *Data provided by Bloomberg as of 9/28/2018*

Fed Funds Futures ease from September 2018 levels

- Recent Fed Funds futures project a 1.50-1.75% rate range for October 2019

Current Implied Probabilities — 3) Add/Remove Rates

Dates: Meeting / Calculation — Calculated 10/10/2019 — Based on rate 1.75-2.00

Meeting	Hike Prob	Cut Prob	0.75-1	1-1.25	1.25-1.5	1.5-1.75	1.75-2	Fwd Rate
10/30/2019	0.0%	78.0%	0.0%	0.0%	0.0%	78.0%	22.0%	1.64
12/11/2019	0.0%	89.8%	0.0%	0.0%	41.8%	48.0%	10.2%	1.51
01/29/2020	0.0%	93.9%	0.0%	16.9%	44.3%	32.7%	6.1%	1.41
03/18/2020	0.0%	95.3%	3.8%	23.0%	41.7%	26.8%	4.7%	1.35
04/29/2020	0.0%	96.1%	7.0%	26.1%	39.2%	23.1%	3.9%	1.31
06/10/2020	0.0%	96.7%	10.0%	28.2%	36.7%	20.0%	3.3%	1.27
07/29/2020	0.0%	97.1%	12.4%	29.3%	34.5%	17.9%	2.9%	1.24
09/16/2020	0.0%	97.5%	14.7%	30.0%	32.3%	15.8%	2.5%	1.20
11/05/2020	0.0%	97.8%	16.7%	30.3%	30.1%	14.1%	2.2%	1.17

(1) Data provided by Bloomberg as of 10/10/19

Expectations for Fed Funds has fallen sharply

STIFEL

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September 2019

End of Quarter Figures

	Q1 2019	*Q2 2019*	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	*2018*	2019	2020
Growth indicators											
GDP, QoQ %	*3.1%*	*2.0%*	1.5%	1.1%	-0.2%	0.8%	1.9%	1.6%	*2.7%*	1.9%	1.0%
Consumer Spending, %	*1.1%*	*4.7%*	2.1%	1.5%	1.0%	2.5%	2.0%	1.9%	*2.3%*	2.4%	1.9%
Fixed Investment, %	*3.2%*	*-1.1%*	2.6%	1.3%	-2.5%	0.8%	2.5%	2.0%	*4.6%*	1.5%	0.7%
Housing Starts, k	*1,199*	*1,253*	1,120	1,110	1,080	1,075	1,065	1,060	*1,221*	1,171	1,070
Unemployment Rate, %	*3.9%*	*3.6%*	3.7%	3.6%	3.6%	3.7%	3.7%	3.7%	*3.9%*	3.7%	3.7%
Nonfarm Payrolls, k	*153*	*178*	150	130	110	140	165	170	*195*	153	146
Inflation indicators, YoY%											
PPI	*2.2%*	*1.7%*	2.4%	2.5%	2.4%	2.3%	2.3%	1.9%	*2.9%*	2.2%	2.2%
PCE	*1.4%*	*1.4%*	1.4%	1.6%	1.6%	1.5%	1.5%	1.3%	*2.1%*	1.5%	1.5%
Core PCE	*1.5%*	*1.6%*	1.7%	1.8%	1.7%	1.6%	1.4%	1.4%	*2.0%*	1.7%	1.5%
Interest rate, %											
FF	*2.50*	*2.50*	2.00	1.50	1.00	0.75	0.75	0.75	*2.13*	2.13	0.81
3month UST bills	*2.39*	*2.09*	1.80	1.45	0.95	0.80	0.85	0.85	*2.05*	1.93	0.86
2yr UST notes	*2.26*	*1.76*	1.55	1.35	1.20	1.12	1.15	1.15	*2.53*	1.73	1.16
5yr UST notes	*2.23*	*1.77*	1.40	1.20	1.10	1.10	1.18	1.20	*2.69*	1.65	1.15
10yr UST notes	*2.41*	*2.01*	1.45	1.28	1.15	1.15	1.20	1.25	*2.84*	1.79	1.19
30yr UST bonds	*2.82*	*2.53*	2.08	1.86	1.55	1.50	1.70	1.85	*3.05*	2.32	1.65
2s to 10s Spread bps	*14*	*25*	-10	-7	-5	3	5	10	*31*	6	3

Lindsey Piegza, Ph.D. - Chief Economist
Source: Bloomberg, Stifel

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Reinvestment of Portfolio Cash Flows

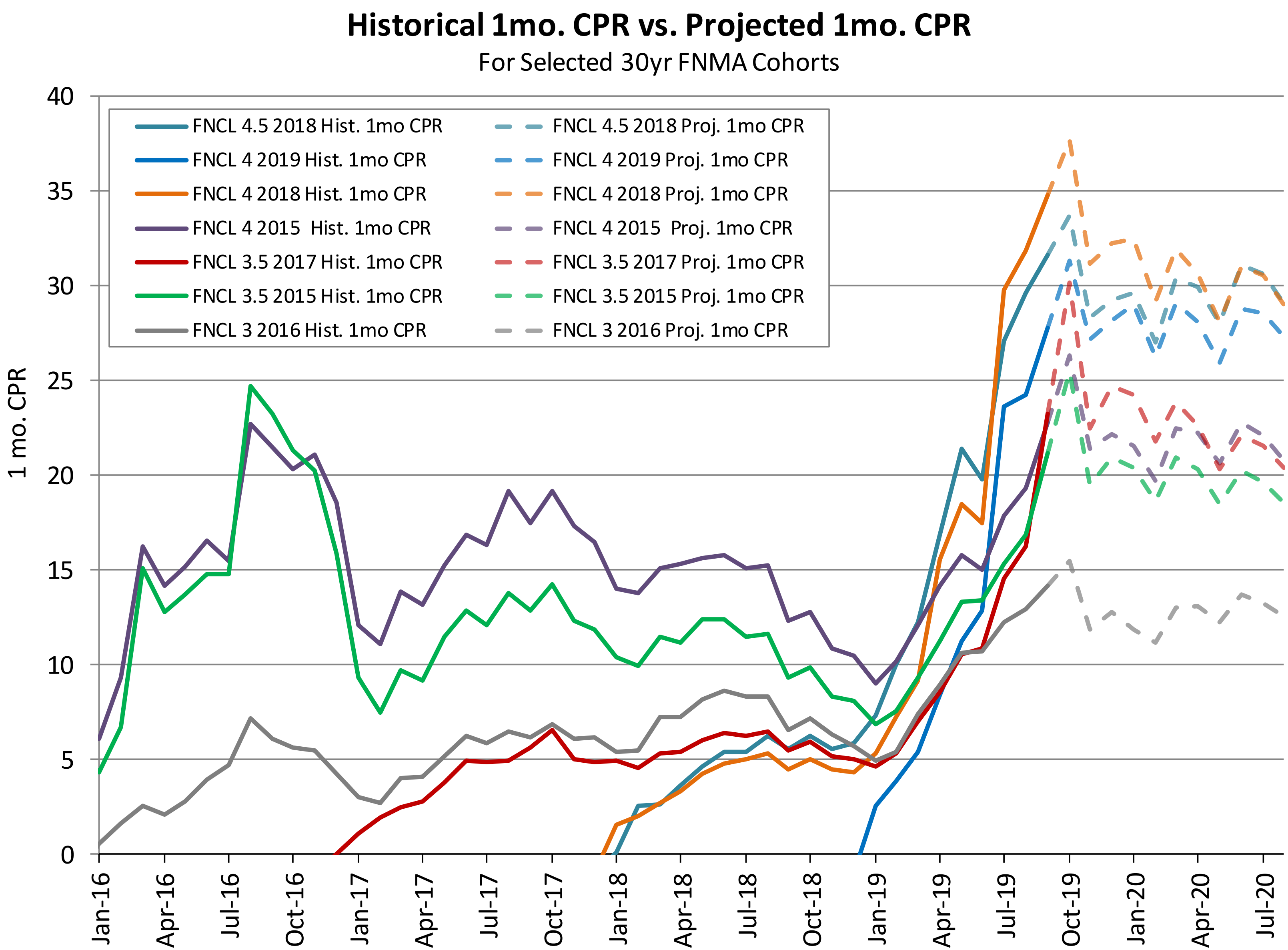
With accelerated prepayments, more portfolio cash flow is coming in

- Reinvestment landscape:

Type	Price	Yield	WAL	Eff. Dur.	Eff. Cvx.	Proj. CPR	Price Volatility -100	Price Volatility +100	Price Volatility +300
5YNC6M Callable Agency	100.00	2.01%	5.0	1.2	(1.5)		0.7%	-2.0%	-9.2%
7YNC3M Callable Agency	100.00	2.53%	7.0	0.9	(2.1)		0.4%	-2.1%	-11.0%
9.5YNC3M Callable Agency	100.00	2.73%	9.5	1.1	(2.7)		0.4%	-2.7%	-13.7%
10 Year MBS	101.54	1.98%	3.4	2.3	(0.9)	14.1	1.9%	-2.7%	-9.4%
15 Year MBS	101.59	2.04%	4.0	2.2	(1.8)	15.3	1.6%	-3.1%	-12.1%
20 Year MBS	102.94	2.25%	4.5	1.9	(2.1)	16.0	1.2%	-3.1%	-13.4%
30 Year MBS	102.05	2.52%	5.2	2.3	(2.8)	15.6	1.3%	-3.7%	-16.8%
Hybrid ARM - 50-65MTR	101.56	1.90%	3.0	2.0	(0.7)	27.2	1.7%	-2.3%	-7.8%
Hybrid ARM - 75-90MTR	102.97	1.91%	3.4	2.3	(0.8)	24.0	2.0%	-2.7%	-9.3%
Hybrid ARM - >100MTR	103.61	1.97%	3.6	1.7	(1.2)	22.8	1.3%	-2.4%	-9.8%
SEQ CMO (Short)	102.63	2.07%	3.2	1.6	(1.4)	9.6	1.0%	-2.2%	-8.9%
SEQ CMO (Mid)	103.78	2.18%	5.1	3.0	(1.2)	13.1	2.4%	-3.5%	-12.4%
VADM CMO	106.19	2.10%	4.8	2.8	(1.1)	11.6	2.2%	-3.4%	-11.7%
3 Year Agency CMBS	102.92	1.67%	3.3	3.1	0.1	0.0	3.2%	-3.1%	-8.9%
5 Year Agency CMBS	105.98	1.84%	5.3	4.8	0.3	0.0	5.0%	-4.7%	-13.4%
7 Year Agency CMBS	109.97	1.92%	7.3	6.5	0.5	0.0	6.7%	-6.2%	-17.4%
10 Year Agency CMBS	106.91	1.99%	9.7	8.5	0.8	0.0	9.0%	-8.1%	-22.2%
FRESB 5 Year Hybrid	104.09	1.96%	4.0	3.6	0.2	5.0	3.7%	-3.6%	-10.4%
FRESB 7 Year Hybrid	105.02	1.98%	5.4	4.9	0.3	5.0	5.1%	-4.8%	-13.5%
FRESB 10 Year Fixed	108.50	2.11%	7.0	6.1	0.5	5.0	6.4%	-5.9%	-16.4%
GNMA Project Loan	101.84	2.19%	4.0	3.7	0.2	8.0	2.4%	-3.9%	-13.1%
GNMA Project Loan	101.28	2.20%	4.8	4.4	0.3	8.0	2.8%	-4.6%	-14.9%
Floating Rate SBA	100.00	2.54%	5.8	0.7	0.4	12.0	0.9%	-0.5%	-1.1%
SBAP (25Y)	101.05	2.06%	7.9	7.0	0.8	5.0	7.4%	-6.6%	-18.0%
15 Year Municipal (AA GO)	119.17	2.12%	10.8	9.3	0.5		9.5%	-9.0%	-25.3%
20 Year Municipal (AA GO)	115.32	2.30%	10.8	9.3	0.6		9.2%	-9.3%	-27.1%
25 Year Municipal (AA GO)	114.86	2.48%	12.9	10.4	(1.2)		10.2%	-10.4%	-29.6%
3.5% TEMS	105.13	2.73%	5.2	1.9	(2.4)	15.4	1.1%	-3.2%	-14.5%
M-TEMS	110.00	2.30%	14.3	11.8	2.0	0.0	12.6%	-11.0%	-28.7%
RMBS 2.0 - Front SEQ (AAA)	101.81	1.22%	0.9	-0.6	0.4	32.6	-0.6%	0.2%	-5.4%
3 Year Financial (A)	100.00	2.04%	3.0	2.9	0.1		2.9%	-2.8%	-8.2%
5 Year Financial (A)	100.00	2.16%	5.0	4.7	0.3		4.8%	-4.6%	-13.0%
7 Year Financial (A)	100.00	2.32%	7.0	6.4	0.5		6.6%	-6.2%	-17.3%
10 Year Financial (A)	100.00	2.52%	10.0	8.8	0.9		9.2%	-8.4%	-22.8%

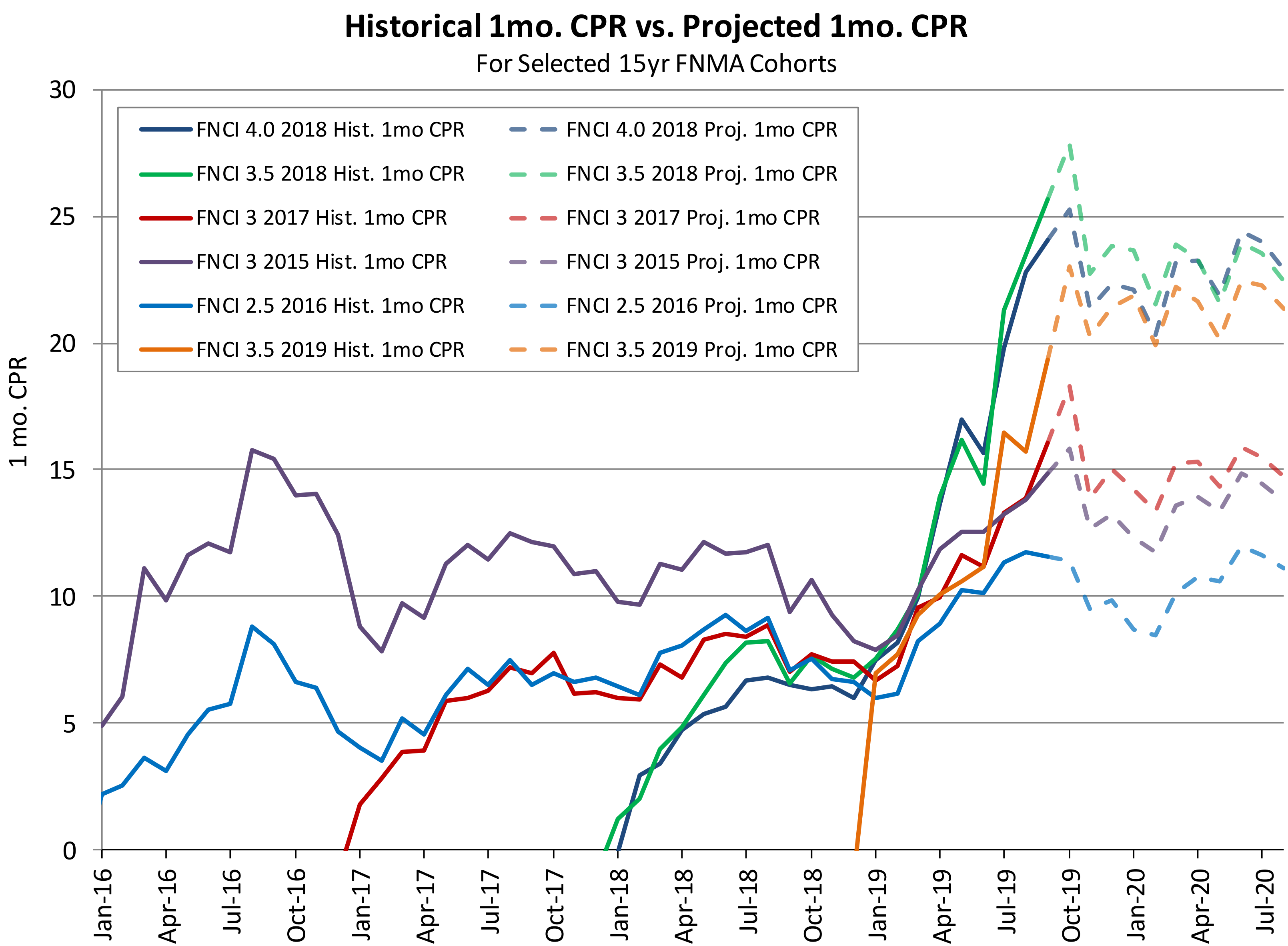
(1) Pricing as of 10/9/2019
(2) TEY calculated assuming 100bps cost of funds and 21% tax rate

Cash Flows Accelerate
Historical and Projected Speeds: Fannie 30yr



Source: Yield Book

Cash Flows Accelerate
Historical and Projected Speeds: Fannie 15yr



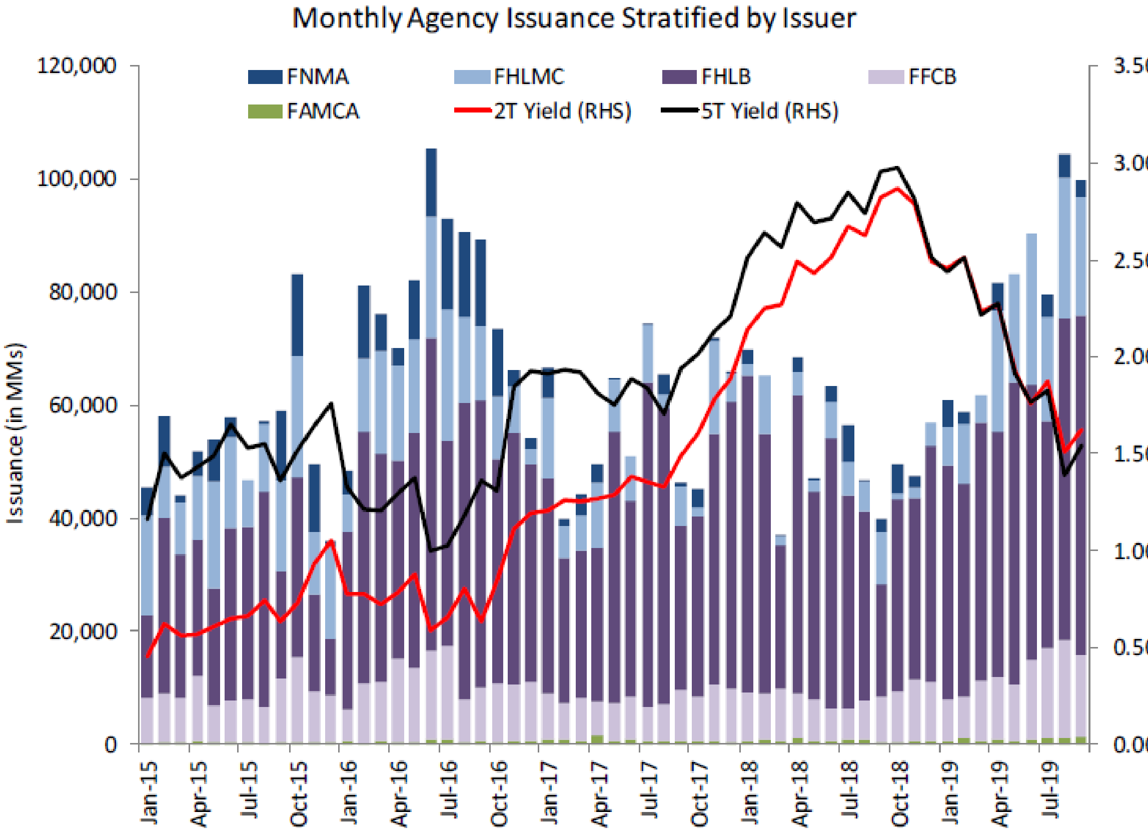
Source: Yield Book

Cash Flows Accelerate
Agency Debenture Issuance

New issuance was $100B in September, about $5B less than August, but still the second highest issuance month since June 2016's $105B tally.

On a year-to-date year-over-year basis, agency issuance was 46% higher, $720B, compared to 2018's $499B.

FHLB was the primary issuer of debt with 59% of September's and 60% of 2019's YTD issuance.



Source: Bloomberg and Stifel

Indications as of September 30, 2019

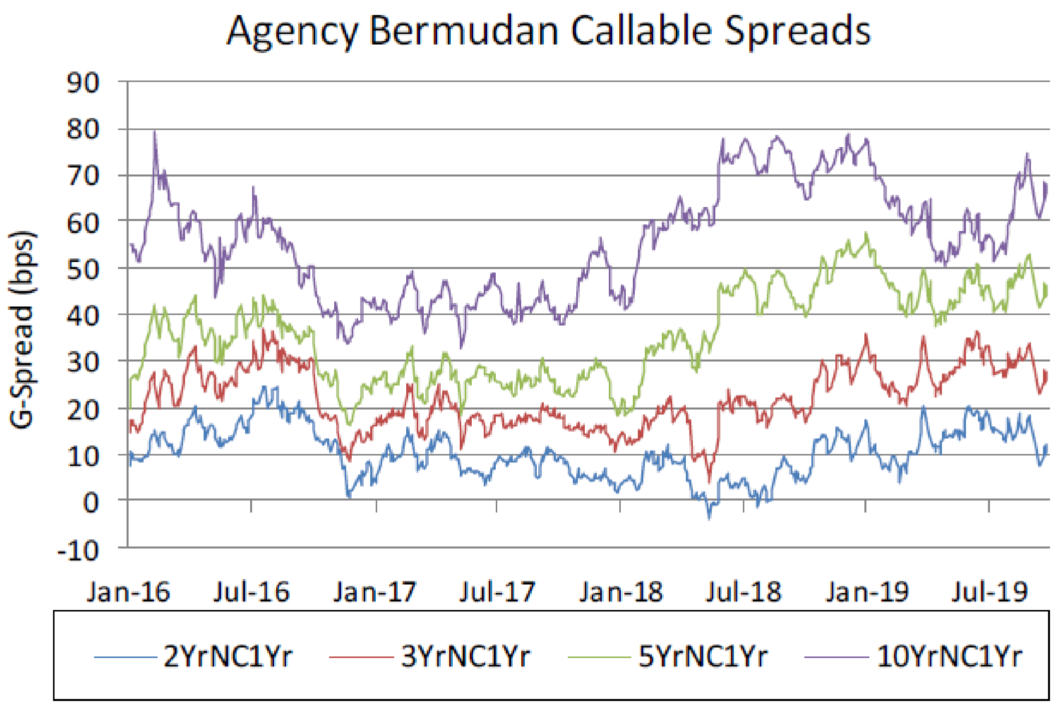
Reinvestment of Portfolio Cash Flows

Historical Spreads – Callable Agency Spreads

Investors continued to seek the incremental yields offered by callables. The demand for securities to replace called positions helped spreads to narrow.

<u>MoM Change (Berm)</u>
2YrNC1Yr: -5bps
3YrNC1Yr: -5bps
5YrNC1Yr: -6bps
10YrNC1Yr:-5bps

<u>YTD Change (Berm)</u>
2YrNC1Yr: -4bps
3YrNC1Yr: -6bps
5YrNC1Yr: -9bps
10YrNC1Yr: -9bps



Source: Bloomberg and Stifel

Indications as of September 30, 2019

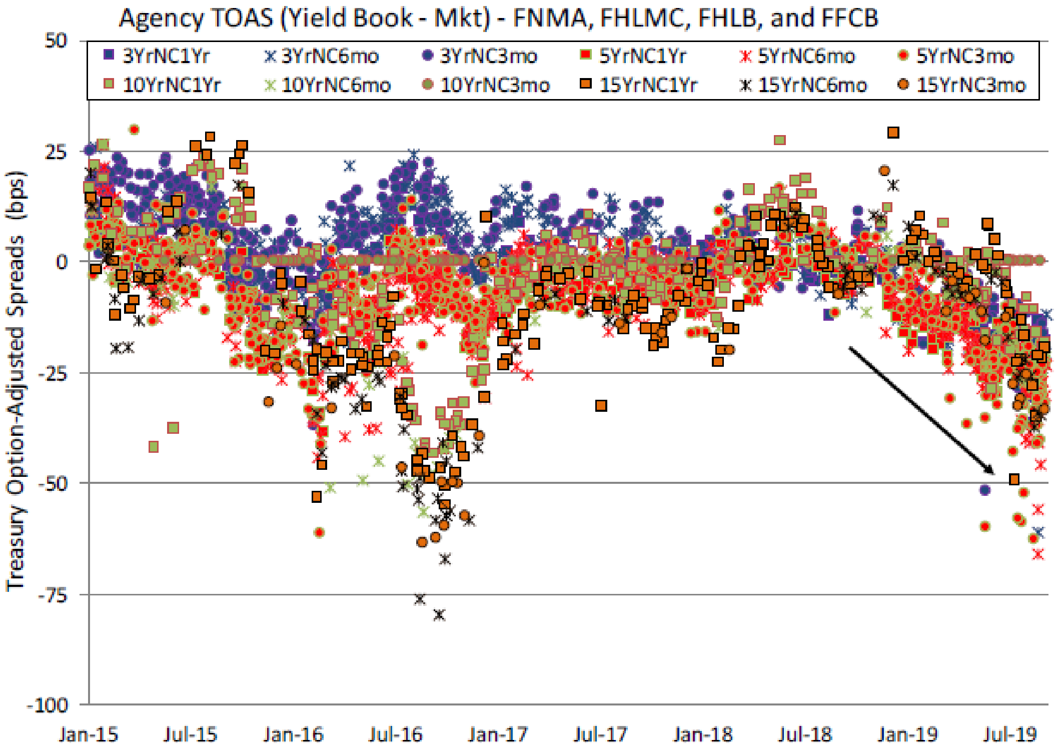
Reinvestment of Portfolio Cash Flows

Historical Spreads – Callable Agency Debenture OAS Tighten

Treasury option-adjusted spreads (TOAS) for callables moved further into negative territory.

Investors have confronted ever more negative TOAS as nominal spreads have failed to rise sufficiently to compensate for the rise in volatility.

10YrNC6Mo appeared to price near flat TOAS.

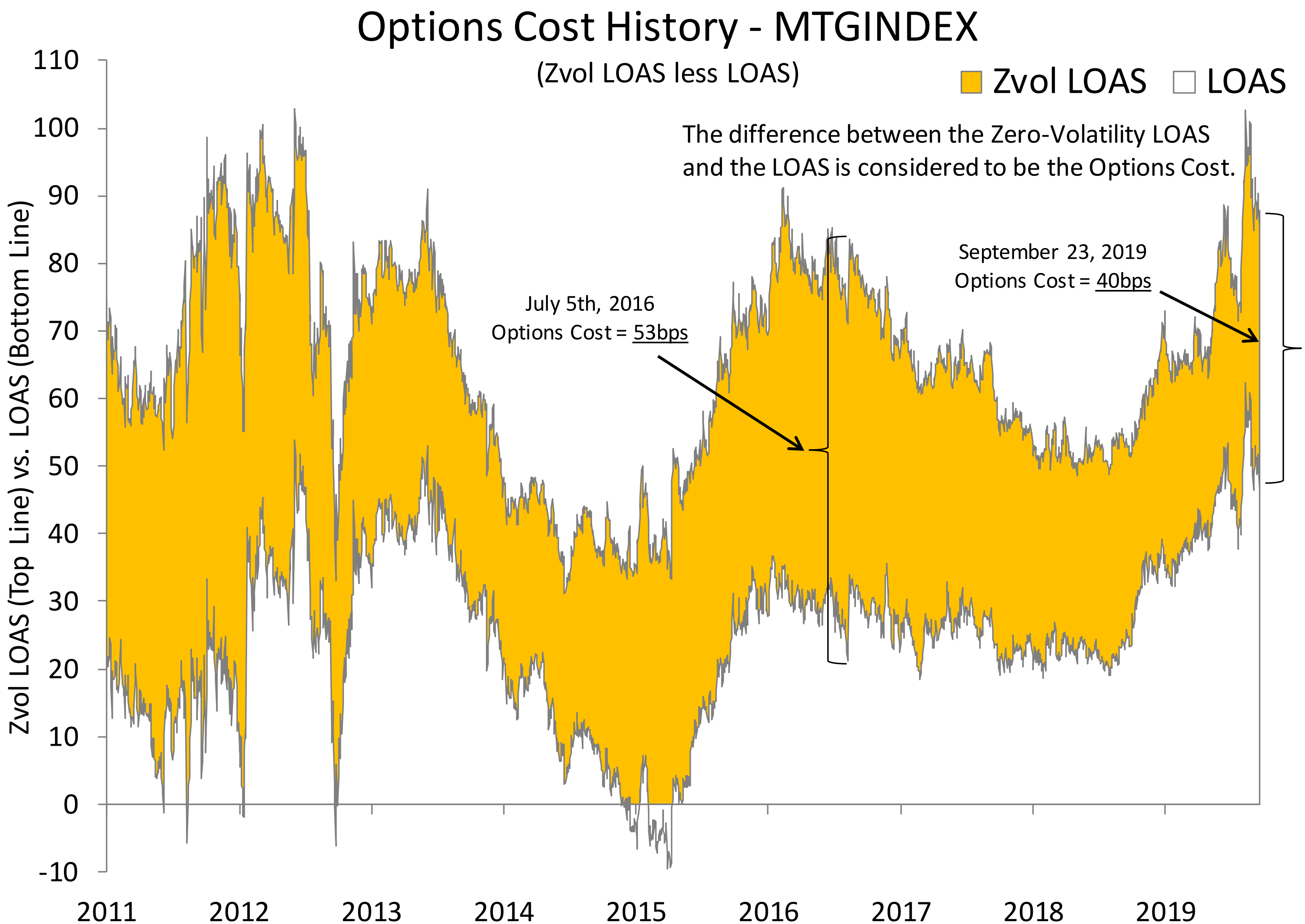


Source: Bloomberg, Yield Book, Stifel

Indications as of September 30, 2019

Reinvestment of Portfolio Cash Flows

Historical Spreads – MBS Nominal Spreads and OAS Widen

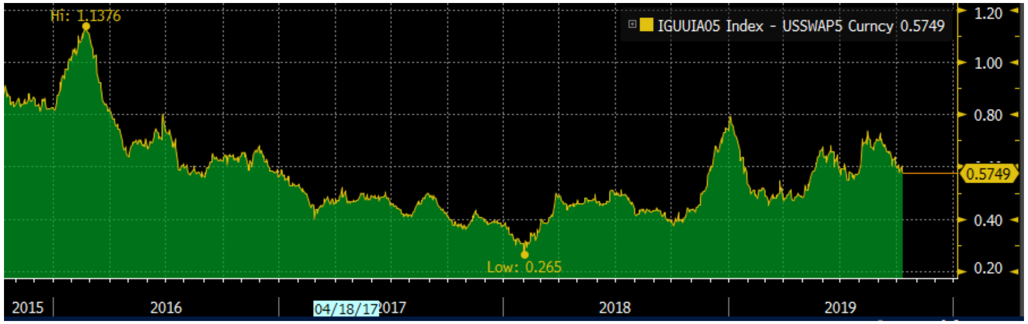


Reinvestment of Portfolio Cash Flows
Historical Spreads – Corporates Tighten

- Corporate spreads (5 year A Bloomberg Composite vs. 5 year swap rate)

- Corporate Financials spreads (5 year A Financials Composite vs. 5 year swap rate)

- Corporate Industrials spreads (5 year A Industrials Composite vs. 5 year swap rate)



(1) Source: Bloomberg, LP

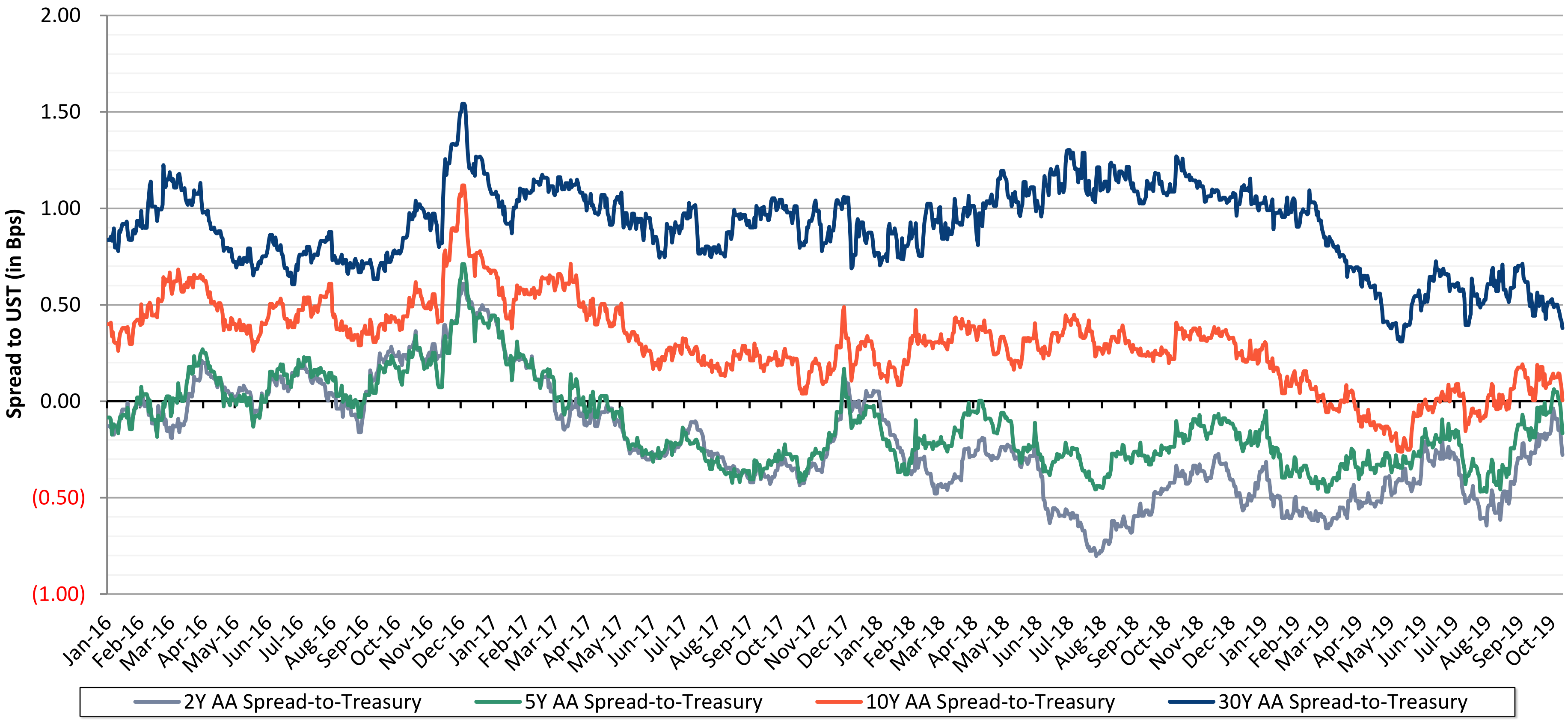
Municipal Market Update: Tax-Exempt Spreads

- After tightening significantly in June and July, longer municipal spreads crept wider in August, although they remain meaningfully lower at 49bps than the 100bps+ levels seen through March of 2019.
- 2yr and 5yr spreads have widened slightly from lows in July, but remain range-bound well through treasuries at a 21% tax rate.
- 10yr spreads have hovered at or around 0bps vs. treasuries on a taxable equivalent basis over the last three months.

AA Spread to Treasuries (Bps)

	Jan. 1, 2018	Aug. 1, 2018	Nov. 1, 2018	May. 20 2019	Oct. 10, 2019
2 Year AA	0.11	(0.71)	(0.27)	(0.39)	(0.28)
5 Year AA	(0.01)	(0.39)	(0.02)	(0.29)	(0.17)
10 Year AA	0.25	0.30	0.44	(0.21)	0.00
30 Year AA	0.82	1.15	1.19	0.45	0.38

Municipal Taxable Equivalent Spreads to Treasuries since January 2016



(1) *Assumes a 21.0% federal tax rate and an 85Bps cost of funds.*
(2) *Sources: Stifel; Bloomberg LP*

Reinvestment of Portfolio Cash Flows

With accelerated prepayments, more portfolio cash flow is coming in

- Reinvestment landscape:

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7YNC3M Callable Agency	100.00	2.53%	7.0	0.9	(2.1)		0.4%	-2.1%	-11.0%
9.5YNC3M Callable Agency	100.00	2.73%	9.5	1.1	(2.7)		0.4%	-2.7%	-13.7%
10 Year MBS	101.54	1.98%	3.4	2.3	(0.9)	14.1	1.9%	-2.7%	-9.4%
15 Year MBS	101.59	2.04%	4.0	2.2	(1.8)	15.3	1.6%	-3.1%	-12.1%
20 Year MBS	102.94	2.25%	4.5	1.9	(2.1)	16.0	1.2%	-3.1%	-13.4%
30 Year MBS	102.05	2.52%	5.2	2.3	(2.8)	15.6	1.3%	-3.7%	-16.8%
Hybrid ARM - 50-65MTR	101.56	1.90%	3.0	2.0	(0.7)	27.2	1.7%	-2.3%	-7.8%
Hybrid ARM - 75-90MTR	102.97	1.91%	3.4	2.3	(0.8)	24.0	2.0%	-2.7%	-9.3%
Hybrid ARM - >100MTR	103.61	1.97%	3.6	1.7	(1.2)	22.8	1.3%	-2.4%	-9.8%
SEQ CMO (Short)	102.63	2.07%	3.2	1.6	(1.4)	9.6	1.0%	-2.2%	-8.9%
SEQ CMO (Mid)	103.78	2.18%	5.1	3.0	(1.2)	13.1	2.4%	-3.5%	-12.4%
VADM CMO	106.19	2.10%	4.8	2.8	(1.1)	11.6	2.2%	-3.4%	-11.7%
3 Year Agency CMBS	102.92	1.67%	3.3	3.1	0.1	0.0	3.2%	-3.1%	-8.9%
5 Year Agency CMBS	105.98	1.84%	5.3	4.8	0.3	0.0	5.0%	-4.7%	-13.4%
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FRESB 10 Year Fixed	108.50	2.11%	7.0	6.1	0.5	5.0	6.4%	-5.9%	-16.4%
GNMA Project Loan	101.84	2.19%	4.0	3.7	0.2	8.0	2.4%	-3.9%	-13.1%
GNMA Project Loan	101.28	2.20%	4.8	4.4	0.3	8.0	2.8%	-4.6%	-14.9%
Floating Rate SBA	100.00	2.54%	5.8	0.7	0.4	12.0	0.9%	-0.5%	-1.1%
SBAP (25Y)	101.05	2.06%	7.9	7.0	0.8	5.0	7.4%	-6.6%	-18.0%
15 Year Municipal (AA GO)	119.17	2.12%	10.8	9.3	0.5		9.5%	-9.0%	-25.3%
20 Year Municipal (AA GO)	115.32	2.30%	10.8	9.3	0.6		9.2%	-9.3%	-27.1%
25 Year Municipal (AA GO)	114.86	2.48%	12.9	10.4	(1.2)		10.2%	-10.4%	-29.6%
3.5% TEMS	105.13	2.73%	5.2	1.9	(2.4)	15.4	1.1%	-3.2%	-14.5%
M-TEMS	110.00	2.30%	14.3	11.8	2.0	0.0	12.6%	-11.0%	-28.7%
RMBS 2.0 - Front SEQ (AAA)	101.81	1.22%	0.9	-0.6	0.4	32.6	-0.6%	0.2%	-5.4%
3 Year Financial (A)	100.00	2.04%	3.0	2.9	0.1		2.9%	-2.8%	-8.2%
5 Year Financial (A)	100.00	2.16%	5.0	4.7	0.3		4.8%	-4.6%	-13.0%
7 Year Financial (A)	100.00	2.32%	7.0	6.4	0.5		6.6%	-6.2%	-17.3%
10 Year Financial (A)	100.00	2.52%	10.0	8.8	0.9		9.2%	-8.4%	-22.8%

In our opinion, these product types and sectors provide the greatest relative value in the current environment.

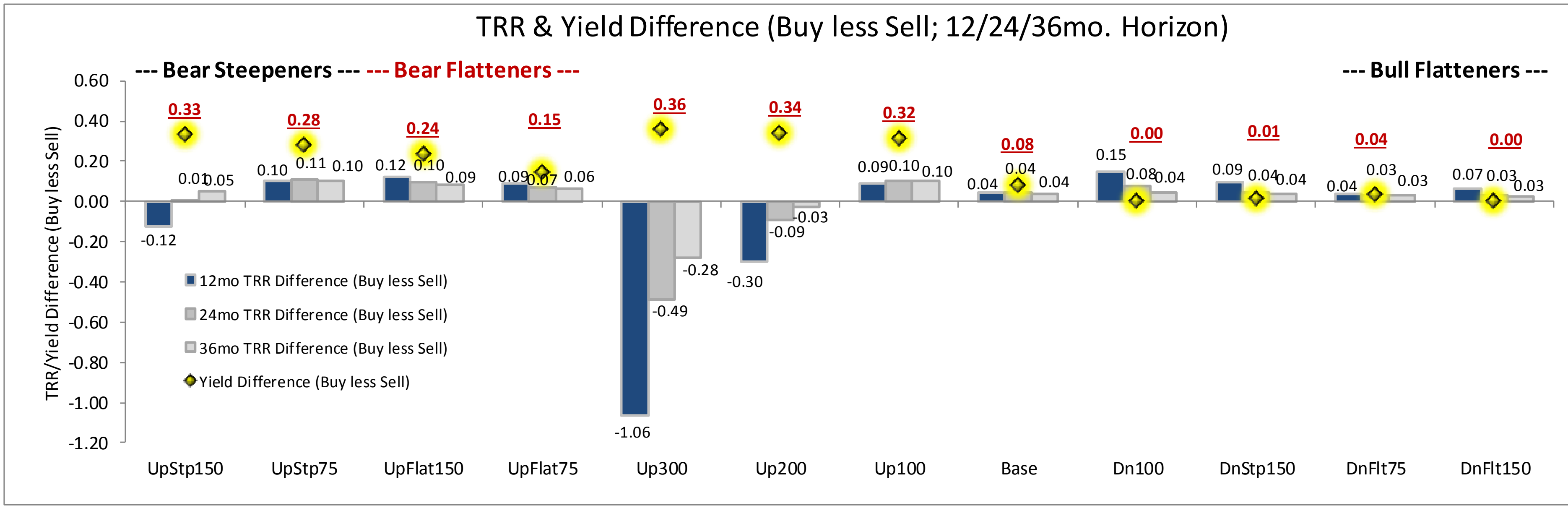
(1) Pricing as of 10/9/2019
(2) TEY calculated assuming 100bps cost of funds and 21% tax rate

The 20yr Basis

Up-in-Coupon: Sell New 15yr 3s, Buy New 20yr 3.5s

Duration-Neutral, Convexity-Neutral, Up-in-Dollar, Pick Spread, Pick OAS, Pick Yield in Every Scenario, Pick TRR in 9 out of 12 Scenarios

Buy/ Sell	Pool	Description	Cpn	WAC	Age	WAM	Pricing Spread	I-Sprd (YldBk)	Mkt Price	Mkt YTM	WAL	Proj 1YCPR	Proj LTCPR	Zvol LOAS	Opt Cost	LIBOR OAS	Eff Dura	Eff Cnvx
Buy	**FN MA3772**	**New 20yr 3.5 PT**	**3.50**	**4.36**	**3**	**238**	**+40/32s vs. FNCL 3.5**	**78**	**103.859**	**2.34**	**3.80**	**20.8**	**19.9**	**78.4**	**39.5**	**38.9**	**1.85**	**-1.64**
Sell	**FN MA3738**	**Fannie 15yr 3%**	**3.00**	**3.67**	**3**	**176**	**+2/32s vs. FNCI 3.0**	**70**	**102.313**	**2.26**	**3.60**	**20.2**	**18.5**	**69.6**	**39.1**	**30.5**	**1.87**	**-1.74**
difference			**0.50**	**0.69**	**0**	**62**		**8**	**1.547**	**0.08**	**0.21**	**0.6**	**1.4**	**8.8**	**0.4**	**8.4**	**-0.02**	**0.11**



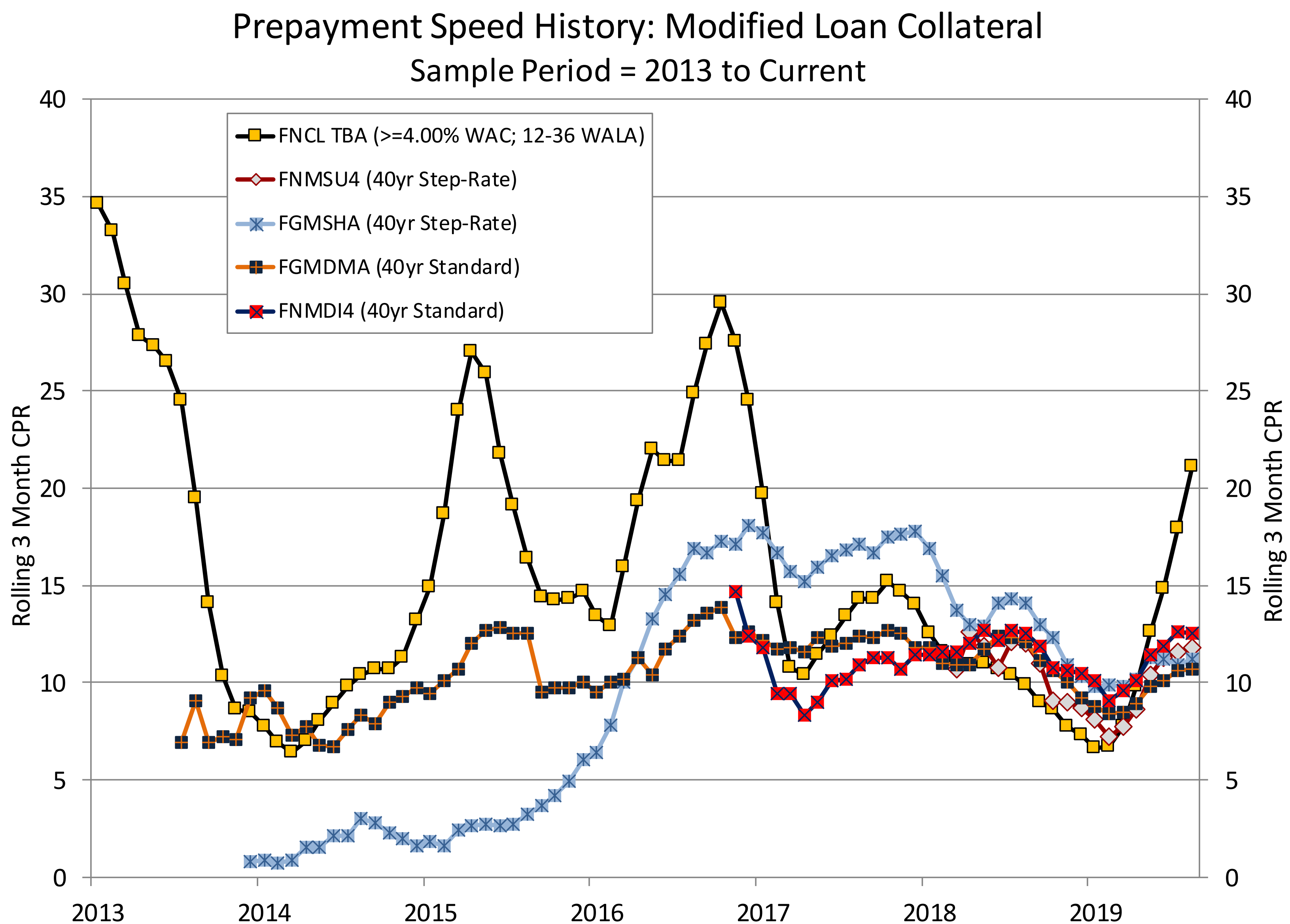
Yield Curve Twist Scenarios:

UpStp150 - 3mo LIBOR up 50bps, 5yr Swap up 100bps, 10yr swap up 150bps
UpStp100 - 3mo LIBOR up 25bps, 5yr Swap up 60bps, 10yr swap up 100bps
UpStp50 - 3mo LIBOR up 0bps, 5yr Swap up 25bps, 10yr swap up 50bps
DnFlt100 - 3mo LIBOR down 37.5bps, 5yr Swap down 75bps, 10yr Swap down 100bps
DnFlt50 - 3mo LIBOR down 0bps, 5yr Swap down 25bps, 10yr Swap down 50bps

UpFlt150 - 3m LIBOR up 150bps, 5yr Swap up 75bps, 10yr Swap up 50bps
UpFlt100 - 3mo LIBOR up 100bps, 5yr Swap up 50bps, 10yr Swap up 25bps
UpFlt50 - 3mo LIBOR up 50bps, 5yr Swap up 25bps, 10yr Swap up 12.5bps

* Total Return Scenarios are ramped to a 12 month horizon and assume constant-OAS horizon pricing to a 12 month horizon; P&I payments are reinvested at 1 month LIBOR.

Modified Loan Collateral has Less Volatile Speeds than TBA Collateral



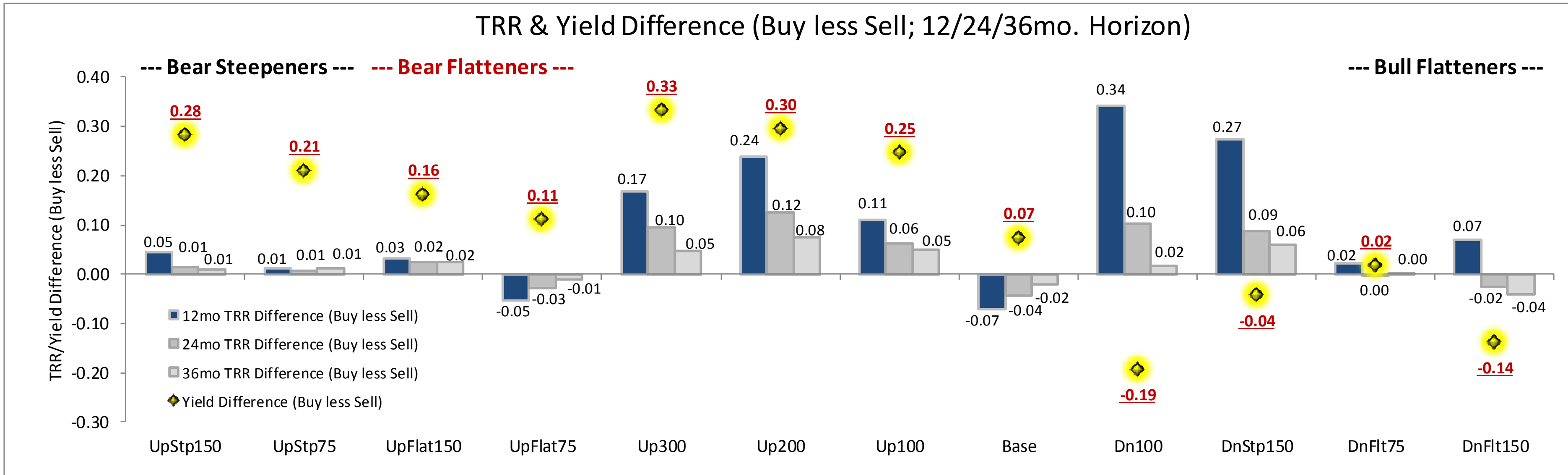
Source: KDS & Stifel

Up-in-Coupon/Pick Convexity Trade into 3.5% Sequentials off Modified

3.5% off Modified 3.5s 5yr SEQ vs. New 15yr 2.5% Passthru

Maintain Duration, Pick Convexity, Pick I-Spread, Pick Yield in All but Extreme Down-Rate Scenarios, Pick TRR(36mo) in All Down-Rate Scenarios

Buy/ Sell	Pool	Description	Cpn	WAC	Age	WAM	Pricing Spread	I-Sprd (YldBk)	Mkt Price	Mkt YTM	WAL	Proj 1YCPR	Proj LTCPR	Zvol LOAS	Opt Cost	LIBOR OAS	Eff Dura	Eff Cnvx
Buy	FNR 2018-81	5yr SEQ | Modified Collat	3.50	4.18	106	318	+85/c/200PSA	74	105.109	2.29	4.78	14.1	13.0	73.8	39.8	34.0	2.63	-1.36
Sell	FN MA3737	FNCI 2.5 Major	2.50	3.28	3	177	+4/32s vs. FNCI 2.5	61	101.016	2.21	4.31	14.1	13.5	59.1	39.4	19.7	2.52	-1.95
difference			1.00	0.90	103	141		13	4.094	0.07	0.47	0.0	-0.5	14.7	0.4	14.3	0.11	0.59



Yield Curve Twist Scenarios:

UpStp150 - 3mo LIBOR up 50bps, 2yr Swap up 75bps, 5yr Swap up 100bps, 10yr swap up 150bps

UpStp75 - 3mo LIBOR up 25bps, 2yr Swap up 37.5bps, 5yr Swap up 50bps, 10yr swap up 75bps

UpFlt150 - 3mo LIBOR up 150bps, 2yr Swap up 100bps, 5yr Swap up 75bps, 10yr swap up 50bps

UpFlt75 - 3mo LIBOR up 75bps, 2yr Swap up 50bps, 5yr Swap up 37.5bps, 10yr swap up 25bps

DnStp150 - 3mo LIBOR down 150bps, 2yr Swap down 100bps, 5yr Swap down 75bps, 10yr swap down 50bps

DnFlt75 - 3mo LIBOR down 37.5bps, 2yr Swap down 50bps, 5yr Swap down 62.5bps, 10yr Swap down 75bps

DnFlt150 - 3mo LIBOR down 75bps, 2yr Swap down 90bps, 5yr Swap down 125bps, 10yr Swap down 150bps

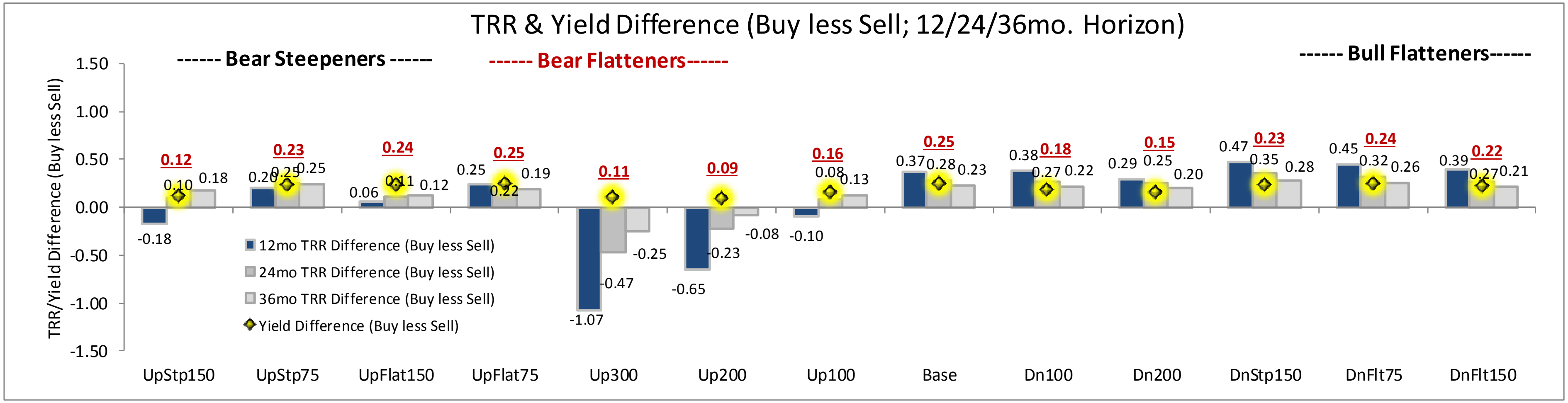
* Total Return Scenarios are ramped to a 12, 24 & 36 month horizon and assume constant-OAS horizon pricing to a 12, 24 & 36 month horizon; P&I payments are reinvested at 1 month LIBOR.

Pure Relative Value: 10x1 Hybrids vs. 15yr MBS

A Relative Value Trade: Sell 15yr 3.5s, Buy LWAC 10x1 Hybrid ARM

Slightly longer Duration, Give Convexity, Pick Spread, Pick LOAS, Pick Yield in EVERY scenario, Pick TRR(36mo) in 11/13 scenarios

Buy/ Sell	Pool	Description	Cpn	WAC	Age	WAM	Pricing Spread	I-Sprd (YldBk)	Mkt Price	Mkt YTM	WAL	Proj 1YCPR	Proj LTCPR	Zvol LOAS	Opt Cost	LIBOR OAS	Eff Dura	Eff Cnvx
Buy	FN BO3158	10x1 Hybrid	3.31	3.95	3	358	99/z/15CPB	80	102.750	2.37	3.31	22.2	24.8	79.2	34.7	44.5	1.48	-1.71
Sell	FN MA3610	Fannie 15yr 3.5%	3.50	4.29	8	169	+2/32s vs. Dw3.5	54	103.469	2.12	2.82	27.6	24.9	54.9	29.8	25.0	1.30	-1.20
difference			-0.19	-0.34	-5	189		26	-0.719	0.25	0.48	-5.4	-0.1	24.3	4.9	19.4	0.18	-0.52



Yield Curve Twist Scenarios:

UpStp150 - 3mo LIBOR up 50bps, 2yr Swap up 75bps, 5yr Swap up 100bps, 10yr swap up 150bps

UpStp75 - 3mo LIBOR up 25bps, 2yr Swap up 37.5bps, 5yr Swap up 50bps, 10yr swap up 75bps

UpFlt150 - 3mo LIBOR up 150bps, 2yr Swap up 100bps, 5yr Swap up 75bps, 10yr swap up 50bps

UpFlt75 - 3mo LIBOR up 75bps, 2yr Swap up 50bps, 5yr Swap up 37.5bps, 10yr swap up 25bps

DnStp150 - 3mo LIBOR down 150bps, 2yr Swap down 100bps, 5yr Swap down 75bps, 10yr swap down 50bps

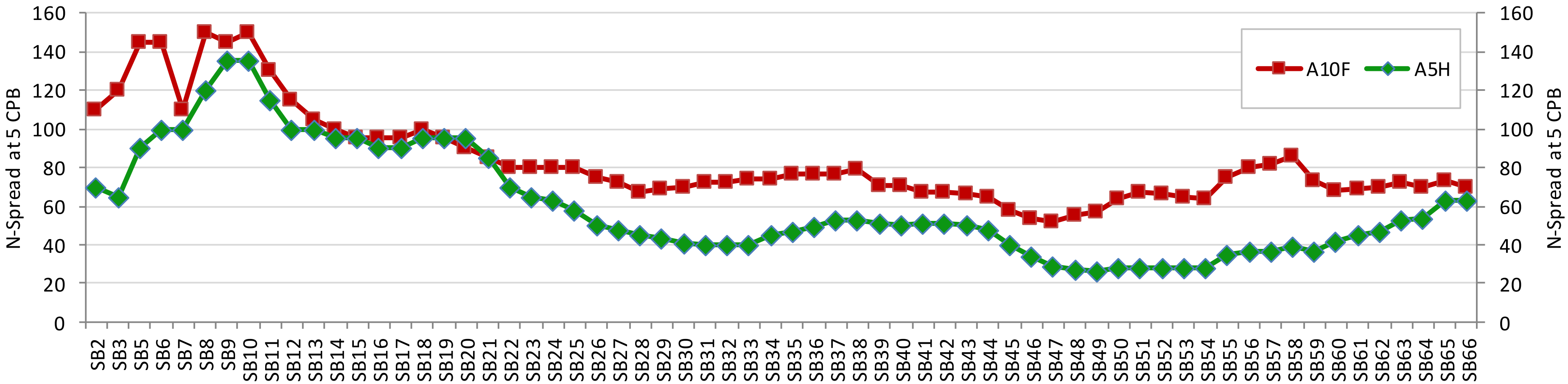
DnFlt75 - 3mo LIBOR down 37.5bps, 2yr Swap down 50bps, 5yr Swap down 62.5bps, 10yr Swap down 75bps

DnFlt150 - 3mo LIBOR down 75bps, 2yr Swap down 90bps, 5yr Swap down 125bps, 10yr Swap down 150bps

* Total Return Scenarios are ramped to a 12, 24 & 36 month horizon and assume constant-OAS horizon pricing to a 12, 24 & 36 month horizon; P&I payments are reinvested at 1 month LIBOR.

FRESBs are the Carry Trade in ACMBS

New Issue Pricing N-Spreads at 5CPB | FRESB A5H & A10F



Ticker	Description	Pricing Spread	Prepayment Assumption	Net Cpn	WAC	Age	WAM	Mkt Price	Mkt YTB	Mkt YTM*	WAL	Eff Dura
FRESB 2019-SB65 A5H	A5H Freddie SBL	63/n	5 CPB	2.13	4.35	6	235	99.813	2.15	2.41	3.99	3.77
FN AN5360	Seas 7/6.5 DUS	48/n	0 CPY	3.12	5.59	29	52	104.500	2.00	2.00	4.18	3.90
FNA 2014-M4 A2	Seas FN ACE A2	50/n	0 CPY	3.35	4.92	68	52	105.250	2.00	2.00	4.22	3.92
FHMS K725 A2	Seas K-Fred A2	42/n	0 CPY	3.00	3.71	35	50	104.125	1.94	1.94	4.23	3.95

Ticker	Description	Pricing Spread	Prepayment Assumption	Net Cpn	WAC	Age	WAM	Mkt Price	Mkt YTB	Mkt YTM*	WAL	Eff Dura
FRESB 2019-SB65 A10F	A10F Freddie SBL	70/n	Step-Up Vector	2.16	4.74	5	116	99.516	2.22	2.22	6.98	6.36
FRESB 2019-SB65 A10H	A10H Freddie SBL	87/n	Step-Up Vector	2.30	4.90	6	234	99.328	2.39	2.43	7.90	6.32
FN BL3902	New 7/6.5 DUS	63/n	0 CPY	2.50	3.25	1	84	102.422	2.15	2.15	6.98	6.37
FNA 2015-M10 A2	Seas FN ACE A2	57/n	0 CPY	3.09	3.99	57	87	106.563	2.08	2.08	7.12	6.38
FHMS K062 A2	Seas K-Fred A2	53/n	0 CPY	3.41	3.80	35	86	108.906	2.05	2.05	7.19	6.37

Source: Freddie Mac, Yield Book & Stifel as of 9/27/2019; ** Step-Up Vector: 0(24), 5(24), 10(24), 15(24), 20(24+)

Multifamily Tax-Exempt MBS: M-TEMS and TEL PCs

Yield Comparison: M-TEMS 18/17 vs. Taxable FN DUS 15/14.5 (21% Federal Corporate Tax Rate)

Buy/ Sell	Pool	Description	Cpn	WAC	Age	Balloon WAM	IO Prd	Rem. YM	N-Sprd	Pricing Spread	Mkt Price	Mkt YTM	Tax-Eq YTM	WAL	Eff Dura	Eff Cnvx
Buy	MTEMS 18/17	MTEMS (New 18/17)	2.72	3.71	0	216	36	204	75	75/n/0CPY	104.578	2.38	2.75	14.83	11.82	1.79
Sell	FN BL3587	DUS (New 15/14.5)	2.96	3.85	2	179	35	174	82	82/n/0CPY	106.328	2.44	2.44	13.46	11.06	1.50
difference			-0.24	-0.14	-2	37	1	30	-7		-1.750	-0.06	0.31	1.37	0.76	0.29

a) Assumes federal corporate income tax rate of 21%
b) Assumes 100% TEFRA disallowance and 100bps cost of funds

Yield Comparison: Freddie TEL PC Seas 16/12 vs. Taxable FN DUS 15/14.5 (21% Federal Corporate Tax Rate)

Buy/ Sell	Pool	Description	Cpn	WAC	Age	Balloon WAM	IO Prd	Rem. YM	N-Sprd	Pricing Spread	Mkt Price	Mkt YTM	Tax-Eq YTM	WAL	Eff Dura	Eff Cnvx
Buy	FG WE2013	TEL PC (Seas 16/12)	2.82	4.52	12	182	0	136	60	60/n/0CPY	106.750	2.20	2.51	12.73	10.64	1.44
Sell	FN AN8054	DUS (Seas 15/14.5)	3.21	4.50	21	160	76	174	75	75/n/0CPY	109.828	2.36	2.36	12.91	10.63	1.34
difference			-0.39	0.02	-9	22	-76	-38	-15		-3.078	-0.17	0.15	-0.18	0.01	0.10

a) Assumes federal corporate income tax rate of 21%
b) Assumes 100% TEFRA disallowance and 100bps cost of funds

Portfolio Repositioning Strategies

Restructuring opportunities also exist on short duration exposures

- Balance Sheet positioning and a change in the interest rate outlook has driven greater interest in strategies designed to enhance performance in rates-down scenarios
  - Though breakeven strategies have become more common, loss-earnback strategies remain relevant given overall mark-to-market on portfolio holdings

- Common sale candidates include a collection of low-yielding bonds paired with select gains
  - Short agencies or tax-exempt munis, and seasoned Agency MBS/CMO/CMBS make strong candidates
  - Large gains on individual holdings may go a long way towards improving portfolio metrics
  - MBS owned at premiums have become a focus given impact of lower rates on prepayment projections

- Reinvestment selections frequently feature some form of lockout or call protection
  - Agency CMBS, CMOs backed by loan balance or modified collateral, and long municipals provide a good combination of yield and rates-down protection

CUSIP	Cpn	Current Par	Book Price	Market Price	G/L ($)	G/L (%)	Book Yld (Exp)	Avg. Life	Eff Dur	Eff Cvx	% Px Δ +300
Sell Side Total	4.24	$48,575,283	102.64	103.02	$3,675	0.0%	1.64%	1.8	0.8	-0.1	-7.7%
Buy Side Total	3.21	$47,350,154	106.06	106.06			2.25%	5.7	4.6	-2.1	-17.3%
Difference	-1.03	-$1,225,128	3.42	3.03			0.61%	3.9	3.8	-2.0	-9.6%

- **Sample breakeven strategy:**
  - **Add 61 basis points of Book Yield**
  - **Extend duration to add rates-down protection**

(1) *Source: Stifel portfolio data. Priced as of 9/30/2019*

Portfolio Restructure Opportunity

****SAMPLE****

Up to ~$200mm below 1.75% book yield at no loss

- Apart from natural portfolio cash flows projected in the near term, there are opportunities to further target low yielding (mid-1%) 1-2y average life securities
- Below is an example of an optimization approach, targeting a minimal book yield giveup on 1-2 year average life securities, while taking no loss

Sector	Subsector	Alloc%	Current Par	Book Px	Market Px	G/L $	G/L %	Cpn	Eff Dur	Eff Cvx	+1% Px Chg	-1% Px Chg	Bk Yld (Exp)	Avg Life	-100 Bk Yld	-100 Avg Life
Treasury/Agency	Agency Bullet	4.8%	9,500	100.00	99.43	-54	-0.6%	1.42	1.47	0.03	-1.5%	1.5%	1.43	1.5	1.43	1.47
	Callable Agency	70.4%	138,926	99.97	99.59	-536	-0.4%	1.50	1.07	-0.69	-1.3%	0.6%	1.52	1.6	1.53	0.37
	Agency Step	0.5%	1,000	100.00	99.78	-2	-0.2%	1.50	0.65	-0.41	-0.8%	0.4%	1.79	0.9	1.50	0.13
MBS Fixed	10yr Fixed MBS	3.6%	7,082	101.13	99.89	-88	-1.2%	2.24	1.37	-0.02	-1.4%	1.4%	1.32	1.4	1.30	1.40
	15yr Fixed MBS	0.4%	778	105.37	103.66	-13	-1.6%	4.75	1.49	-0.05	-1.5%	1.5%	1.24	1.7	1.18	1.61
	20yr Fixed MBS	0.5%	877	106.71	105.88	-7	-0.8%	4.90	1.64	0.00	-1.6%	1.7%	0.92	1.8	0.88	1.76
	30yr Fixed MBS	0.2%	284	111.09	116.06	14	4.5%	6.27	2.93	-0.17	-3.0%	3.0%	3.09	4.4	2.88	4.06
CMO Fixed	Sequential	6.6%	12,937	101.78	100.51	-164	-1.2%	3.38	-0.58	0.39	0.3%	0.0%	1.07	1.0	-0.25	0.71
	PT	1.0%	2,003	100.69	99.41	-26	-1.3%	1.98	0.92	-0.03	-0.9%	0.9%	1.14	1.0	1.11	0.94
	CMO Fixed Other	0.3%	465	103.39	109.45	28	5.9%	4.89	2.10	0.02	-2.1%	2.1%	2.47	2.3	2.46	2.26
Agency CMBS	DUS	1.6%	3,000	101.29	107.84	197	6.5%	3.80	5.41	0.34	-5.3%	5.6%	3.37	6.0	3.37	6.04
	Freddie K	7.4%	13,976	100.90	103.87	415	2.9%	3.00	4.32	0.25	-4.2%	4.5%	2.70	4.7	2.70	4.69
Small Business	SBIC	2.7%	5,307	98.07	100.63	136	2.6%	2.10	4.59	0.30	-4.6%	4.6%	2.47	4.9	2.48	4.76
Subtotal		**100.0%**	**196,133**	**100.25**	**100.20**	**-101**	**-0.1%**	**1.86**	**1.40**	**-0.43**	**-1.6%**	**1.2%**	**1.62**	**1.9**	**1.53**	**1.03**

(1) Indicative pricing as of 9/30/19

Case Study:

Creating Down Rates Protection in Securities Portfolio

****SAMPLE****

- In the recently executed transaction below, the client identified the sale of 3% to 4% Front Sequential CMOs and VADMS with less than 2 year Weighted Average Lives as underperformers in a down-rate environment with:
  - **Sales have limited price appreciation potential and significant premium and book yield exposure in rates down**
- Client will ideally reinvest proceeds into longer duration securities such as CMBS and Modified Collateral Pools
  - **Purchases have stable yield profiles, prepayment protection to decrease asset sensitivity and improve total return**

Transaction Highlights

- **Improve Book Yield by 26bps on overall transaction**
- **Pair gains with losses in the portfolio to remain gain/loss neutral on the overall transaction**
- **Rotate out of sectors that have no price appreciation potential but significant earnings compression in further rates down scenarios**
- **Rotate into sectors that are stable, high performers in rates down scenarios, locking in yield and prepayment protection**

Securities Sold

CUSIP	Security Description	Sector	Cpn	Maturity	Original Par	Current Par	Book Price	Market Price	G/L ($)	G/L (%)	% Px Δ +300	Eff Dur	Eff Cvx	Speed	Book Yld (Exp)	Avg. Life	Book YTW
36192XXT1	G2 AR3390	HECM Fixed Po	4.44	12/20/2065	$1,294,604	$630,961	102.25	100.78	-$9,305	-1.4%	-2.1%	0.7	0.0	18cpr	0.91%	0.7	0.91%
36193EK58	G2 AR7516	HECM Fixed Po	4.41	03/20/2066	$1,000,000	$330,764	101.48	100.66	-$2,701	-0.8%	-1.9%	0.7	0.0	19cpr	1.77%	0.7	1.77%
3137BWYH1	FHR 4674 A	Sequential	3.00	12/15/2042	$9,009,310	$6,314,893	101.57	101.50	-$4,389	-0.1%	-9.6%	0.7	-1.8	13cpr	2.30%	2.5	2.30%
3137F5GZ6	FHR 4784 VN	Sequential	4.00	10/15/2029	$7,713,000	$6,985,654	102.62	103.22	$41,711	0.6%	-7.0%	-0.3	-0.9	30cpr	2.47%	1.9	2.47%
3137BDYB6	FHR 4387 DE	Sequential	2.00	01/15/2032	$5,050,000	$1,963,139	100.17	99.31	-$16,960	-0.9%	-6.7%	1.8	-0.7	11cpr	1.88%	2.0	1.88%
3137FHVP5	FHR 4830 MA	Sequential	4.00	08/15/2042	$7,000,000	$5,312,681	101.14	100.56	-$30,867	-0.6%	-6.6%	0.3	-0.1	32cpr	2.05%	0.7	2.05%
3137FJWW5	FHR 4838 NQ	Sequential	3.50	10/15/2040	$10,000,000	$7,246,412	101.07	100.06	-$73,066	-1.0%	-6.4%	0.5	-0.4	32cpr	1.09%	0.5	1.09%
3137F5CK3	FHR 4790 HV	Sequential	4.00	06/15/2029	$10,000,000	$9,025,484	102.46	102.69	$20,930	0.2%	-6.0%	-0.6	0.4	29cpr	2.19%	1.5	2.19%
3137F5CK3	FHR 4790 HV	Sequential	4.00	06/15/2029	$5,000,000	$4,512,742	102.26	102.69	$19,450	0.4%	-6.0%	-0.6	0.4	29cpr	2.33%	1.5	2.33%
3137AG3X6	FHR 3943 GE	Sequential	2.00	12/15/2025	$2,000,000	$191,972	100.11	99.03	-$2,079	-1.1%	-2.8%	0.9	-0.1	16cpr	1.79%	0.9	1.79%
3137FERD4	FHR 4767 HA	PAC1	3.50	12/15/2041	$5,000,000	$4,336,932	101.04	101.63	$25,584	0.6%	-5.6%	-1.2	3.3	29cpr	2.11%	0.9	2.11%
38380GWK6	GNR 2017-137 CV	VADM	3.00	11/20/2030	$12,000,000	$10,523,665	101.86	102.31	$46,967	0.4%	-9.9%	0.8	-0.9	39cpr	2.19%	2.5	2.19%
3136B0FQ4	FNR 2017-100 VA	VADM	3.50	03/25/2029	$3,184,000	$2,764,705	103.26	103.69	$11,836	0.4%	-8.2%	-0.2	-1.1	33cpr	2.14%	2.6	2.14%
3136B0CV6	FNR 2017-97 VA	VADM	3.50	03/25/2029	$6,039,000	$5,244,319	103.01	102.75	-$13,494	-0.2%	-6.7%	-0.9	0.7	31cpr	1.60%	1.7	1.60%
Sell Side Total			3.53		$84,289,914	$65,384,323	101.92	101.94	$13,619	0.0%	-7.2%	0.0	-0.2		2.03%	1.6	2.03%

Securities Purchased

CUSIP	Security Description	Sector	Cpn	Maturity	Original Par	Current Par	Book Price	Market Price	G/L ($)	G/L (%)	% Px Δ +300	Eff Dur	Eff Cvx	Speed	Book Yld (Exp)	Avg. Life	Book YTW
3140FXJJ2	FN BF0264	MBS Fixed Othe	3.50	05/01/2058	$15,000,000	$14,157,341	105.98	105.98			-18.5%	5.6	-0.7	11cpr	2.52%	7.4	2.52%
3140FXKM3	FN BF0299	MBS Fixed Othe	3.50	08/01/2058	$10,000,000	$9,740,060	105.89	105.89			-18.4%	5.5	-0.8	11cpr	2.52%	7.2	2.52%
3140FXFK3	FN BF0169	MBS Fixed Othe	3.50	01/01/2057	$15,000,000	$11,438,923	106.08	106.08			-18.3%	5.7	-0.4	11cpr	2.49%	7.3	2.49%
3140FXEX6	FN BF0149	MBS Fixed Othe	3.00	11/01/2046	$15,000,000	$10,566,777	104.45	104.45			-13.6%	4.1	-0.6	10cpr	2.07%	5.4	2.07%
3137FETN0	FHMS K073 A2	Freddie K	3.35	01/25/2028	$6,000,000	$6,000,000	110.81	110.81			-19.4%	7.3	0.6	0cpr	1.92%	8.3	1.92%
3137FCJK1	FHMS K070 A2	Freddie K	3.30	11/25/2027	$8,245,000	$8,245,000	110.23	110.23			-19.0%	7.1	0.6	0cpr	1.92%	8.1	1.92%
Buy Side Total			3.37		$69,245,000	$60,148,101	106.78	106.78			-17.8%	5.7	-0.3		2.29%	7.2	2.29%
Difference			-0.16		-$15,044,914	-$5,236,222	4.86	4.84			-10.5%	5.7	-0.1		0.26%	5.5	0.26%

- Fed Funds Easing Cycle
- Investment Portfolio Considerations
- ***HTM Reclassification***
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Hedge Accounting Standard: PBE "Second Chance" Reclass

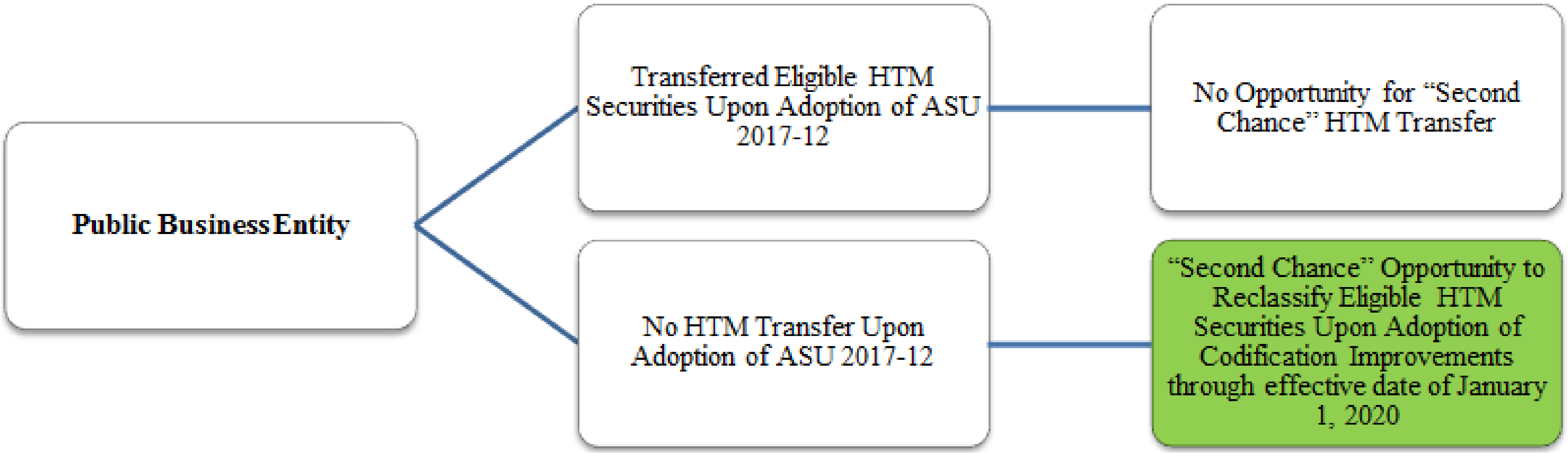
- On April 25, 2019, the Financial Accounting Standards Board (FASB) issued the Accounting Standards Update (ASU) 2019-04 – "Codification Improvements – Financial Instruments"
- The release of the ASU provides certain technical corrections to the Credit Loss, Hedging and Recognition and Measurement standards for financial instruments.
- Key excerpt:

Entities that did not reclassify debt securities from held-to-maturity to available-for-sale upon adoption of the amendments in Update 2017-12 and elect to reclassify debt securities upon adoption of the amendments in this Update are required to reflect the reclassification as of the date of adoption of this Update. Entities that reclassified debt securities from held-to-maturity to available-for-sale upon adoption of the amendments in Update 2017-12 are not permitted to make any additional reclassifications.

- Allows an institution that has already adopted the hedging standard, ASU 2017-12, to reclassify eligible HTM securities to AFS upon adoption of this technical correction update.
- ASU 2019-04 can be early adopted at any point in time between now and its effective date, early next year.
- Importantly, the opportunity to reclassify securities from HTM to AFS upon adoption of the technical correction standard is only applicable for institutions that did not reclassify securities upon adoption of ASU 2017-12.

(1) https://www.fasb.org/jsp/FASB/FASBContent_C/ActionAlertPage&cid=1176170021052

Road Map for Potential HTM Reclassification



Who’s done it and why?

- The Codification Update, ASU 2019-04, creates second chance opportunity to transfer prepayable instruments from HTM to AFS
  - No second chance if any holdings were transferred when adopting in a prior period
- Many high-profile institutions across the county implemented ASU 2017-12’s transfer provisions in 2018, and a growing number are also taking advantage of the PBE second-chance:

Bank of Hawaii

*On June 10, 2019, prepayable debt securities with **a carrying value of $1.0 billion and a net unrealized gain of $3.1 million were transferred from held-to-maturity to available-for-sale**. The reclassified securities consisted of mortgage-backed securities issued by U.S. government agencies and government-sponsored enterprises, municipal debt securities, and corporate debt securities.*

investors Bank

*As part of the adoption, the Company reclassified **approximately $400 million of debt securities held-to-maturity to debt securities available-for-sale**. The Company subsequently sold approximately $405 million of debt securities available-for-sale at an estimated non-recurring after tax loss of approximately $4 million to be recognized in the second quarter of 2019. Proceeds from the sale were reinvested in debt securities yielding on average 79 basis points higher than the securities sold. In addition, the Company modified $350 million of borrowings. The modification resulted in interest cost savings of 45 basis points, net of modification costs. The Company expects the securities and modification of debt transactions will yield a tangible book value earn back of approximately one year.*

- Transferring holdings from HTM creates additional operating flexibility:
  - Reduce or eliminate CECL costs (implicit or explicit) tied to HTM holdings
  - Transfer to AFS adds flexibility in generating liquidity
  - Sale of low-yielding securities may combat NIM pressure via bond swaps or selective deleverage
- A different operating environment requires a different strategy
  - Potential rate cuts reduce (or reverse) benefit of protecting Tangible Book Value
  - Build additional cushion against changes in asset quality if economic activity slows

(1) Sources: Bank of Hawaii 10-Q for the period ended June 30, 2019. Investors Bancorp 8-K released June 19, 2019.

New Hedging Accounting Standard: Potential HTM Transfer

Transferable HTM Securities by Sector

Sector/Subsector	Total Portfolio	% of Total Portfolio	Amount in HTM	% of **Total** Portfolio in HTM	Amount in HTM that is Transferable	% in HTM that is Transferable	% of **Total** Portfolio
15yr Fixed MBS	$554,012,494	20.7%	$388,906,592	70.2%	$388,906,592	**100.0%**	70.2%
20yr Fixed MBS	$151,843,946	5.7%	$30,627,606	20.2%	$30,627,606	**100.0%**	20.2%
30yr Fixed MBS	$36,592,671	1.4%	$0	0.0%	$0	**0.0%**	0.0%
Sequential	$169,798,430	6.3%	$0	0.0%	$0	**0.0%**	0.0%
PAC1	$707,209,959	26.4%	$0	0.0%	$0	**0.0%**	0.0%
PT	$8,466,950	0.3%	$0	0.0%	$0	**0.0%**	0.0%
CMO Fixed Other	$641	0.0%	$0	0.0%	$0	**0.0%**	0.0%
Agy Floating CMO	$5,968	0.0%	$0	0.0%	$0	**0.0%**	0.0%
Project Loans	$116,927,999	4.4%	$0	0.0%	$0	**0.0%**	0.0%
Fannie ACES	$25,000,000	0.9%	$0	0.0%	$0	**0.0%**	0.0%
FRESB	$289,418,668	10.8%	$0	0.0%	$0	**0.0%**	0.0%
BQ GO	$9,000,000	0.3%	$0	0.0%	$0	**0.0%**	0.0%
GM GO	$409,330,000	15.3%	$146,745,000	35.9%	$146,745,000	**100.0%**	35.9%
GM REV	$5,905,000	0.2%	$0	0.0%	$0	**0.0%**	0.0%
Finance	$174,505,000	6.5%	$5,000,000	2.9%	$5,000,000	**100.0%**	2.9%
Corporate Other	$20,350,000	0.8%	$0	0.0%	$0	**0.0%**	0.0%
Totals:	**$2,678,367,726**	**100.0%**	**$571,279,198**	**21.3%**	**$571,279,198**	**100.0%**	**21.3%**

Although the held-to-maturity (HTM) portfolio represents just 21.3% of total securities, **the entire HTM portfolio meets the GAAP definition of "prepayable" and should be transferable under the standard.**

(1) *Book Prices provided by as of 6/30/2019, Market Prices provided by Stifel's proprietary pricing matrix as of 8/7/2019 and may not represent executable levels*

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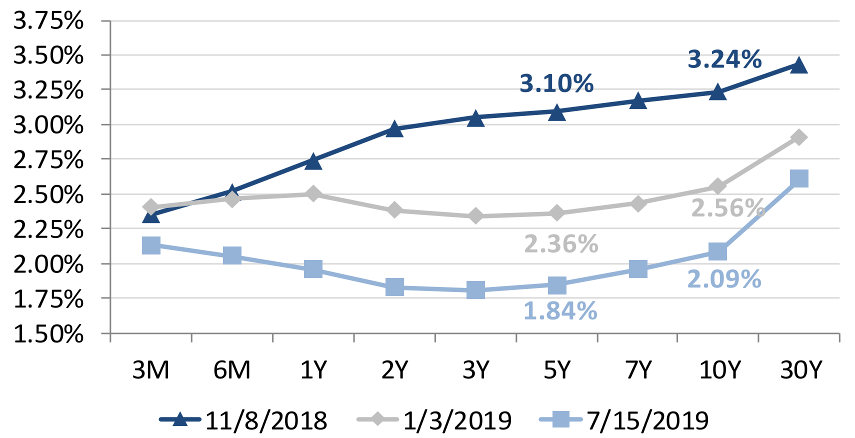
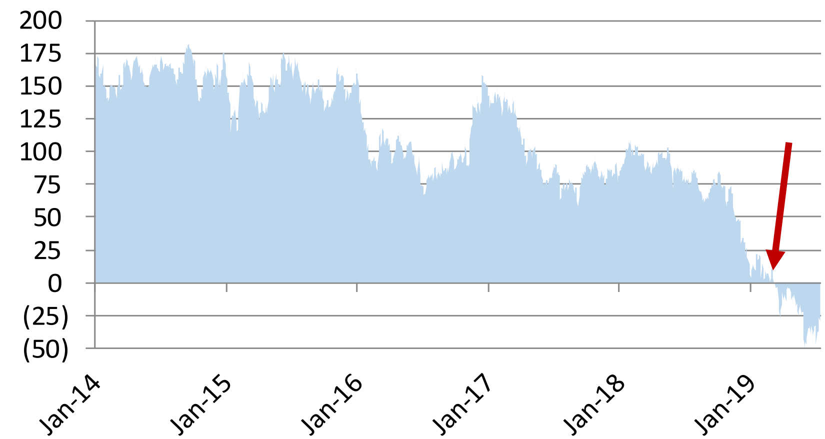
Inverted Curve Creates Deleverage Opportunities

Historical Curve Comparison



3 Month / 5 Year Treasury Spread



- As expected Fed policy has shifted from rate increases to rate cuts, the yield curve has shifted dramatically lower and caused certain curve spreads to invert
- Institutions who utilized wholesale channels to fund balance sheet growth during the liquidity-constrained environment of the past several years may find themselves generating little to no spread on those borrowings given declines in asset yields

Example from 2Q2019:

AssociatedBank

- "In order to mitigate net interest margin pressure, we actively managed both our investment positions and our funding positions in the second quarter. We sold almost $500 million of securities and paid down a like amount of Federal Home Loan bank advances."

- ASB earnings call, 7/25/2019

Strategy Summary: Deleverage Scenarios

- Each deleverage strategy below explores various constraints, with the overarching goal of improving Net Interest Margin by removing inefficient balance sheet items

	Beginning Data	Strategy 1 Pro Forma	Strategy 1 Change	Strategy 2 Pro Forma	Strategy 2 Change	Strategy 3 Pro Forma	Strategy 3 Change
		$25mm Deleverage Max NII Terminate 11/2020 FHLB		$25mm Deleverage Max NII Terminate 7/2020 FHLB		$50mm Deleverage Max NII Terminate both FHLB 7/2020 and 11/2020	
Transaction Detail							
Portfolio Balance	336,416	311,823	*(24,593)*	311,829	*(24,587)*	287,678	*(48,738)*
Avg Yield	*3.15%*	3.21%		3.22%		3.26%	
Security Sales		25,130		25,285		48,755	
Avg Yield		2.41%		2.31%		2.48%	
Liability Balance	125,000	100,000	*(25,000)*	100,000	*(25,000)*	75,000	*(50,000)*
Avg Cost	*2.54%*	2.41%		2.47%		2.29%	
Liability Prepays		25,000		25,000		50,000	
Avg Cost		3.03%		2.80%		2.92%	
+300 Price Volatility	11.8%	11.9%	*0.2%*	12.1%	*0.3%*	11.9%	*0.1%*
Impact on Earnings							
Net Interest Income	165,048	165,203	*155*	165,173	*125*	165,264	*216*
Net Interest Margin	4.30%	4.34%	*0.03%*	4.34%	*0.03%*	4.37%	*0.06%*
Net Income	50,734	50,857	*123*	50,833	*99*	50,905	*171*
ROAA	1.18%	1.19%	*0.01%*	1.19%	*0.01%*	1.20%	*0.02%*
ROAE	8.91%	8.94%	*0.03%*	8.93%	*0.02%*	8.95%	*0.04%*
Gain / (Loss)		2		5		0	
Cost of Funds	1.32%	1.31%	*-0.01%*	1.31%	*-0.01%*	1.30%	*-0.02%*
Impact on Capital							
Tier 1 Leverage	10.57%	10.63%	*0.06%*	10.63%	*0.06%*	10.69%	*0.12%*
CET1 Risk Based	12.02%	12.05%	*0.04%*	12.05%	*0.04%*	12.07%	*0.06%*
Tier 1 Risk Based	12.02%	12.05%	*0.04%*	12.05%	*0.04%*	12.07%	*0.06%*
Total Risk Based	13.71%	13.75%	*0.04%*	13.75%	*0.04%*	13.77%	*0.06%*
Tangible Equity Ratio	10.64%	10.70%	*0.05%*	10.70%	*0.06%*	10.75%	*0.11%*
TCE / TA	10.64%	10.70%	*0.05%*	10.70%	*0.06%*	10.75%	*0.11%*

$50mm Deleverage improves $NII by 216k

$50mm Deleverage improves %NIM by 6 bps

(1) Book Prices and Funding Data provided by sample bank as of 9/30/2019, Beginning Data provided by SNL as of 6/302019
(2) Estimated prepayment penalty per Stifel Fixed Income as of 10/4/2019 and may not represent executable levels
(3) Market Prices provided by Stifel's Fixed Income Proprietary Pricing Matrix as of 10/4/2019 and may not represent executable levels
(4) Strategies presented do not represent an exhaustive list – there are a number of alternative scenarios that may produce different results

Strategy 1: Deleverage Transaction Detail

Asset Summary - Strategy Sales							
Category	Current Face	Book Price	Market Price	Book Yield	WAL	Eff Dur	Gain / Loss
Treasury/Agency	2,500,000	95.62	102.22	3.34	3.7	3.5	164,884
MBS Fixed	2,795,359	104.32	104.00	2.06	2.7	2.2	(8,893)
ARM	-	-	-	-	-	-	-
CMO Fixed	-	-	-	-	-	-	-
CMO Floating	-	-	-	-	-	-	-
Agency CMBS	-	-	-	-	-	-	-
Small Business	-	-	-	-	-	-	-
Private Label	-	-	-	-	-	-	-
Municipal	6,835,000	103.52	105.55	2.49	6.5	5.8	138,657
Corporate	13,000,000	101.50	102.39	2.28	2.4	2.3	115,384
Total	**25,130,359**	**101.78**	**103.41**	**2.41**	**3.7**	**3.4**	**410,032**

Liability Summary - Strategy Unwinds							
Category	Par Amount	Rate	Unwind Price	Maturity	Duration		Gain / Loss
					Flat	+300	
FHLB Bullet 1	-	-	-	-	-	-	-
FHLB Bullet 2	-	-	-	-	-	-	-
FHLB Bullet 3	25,000,000	3.03	101.63	11/20/2020	1.1	1.1	(407,508)
FHLB Bullet 4	-	-	-	-	-	-	-
FHLB Bullet 5	-	-	-	-	-	-	-
Total	**25,000,000**	**3.03**	**101.63**	**11/20/2020**	**1.1**	**1.1**	**(407,508)**

Portfolio Summary	Current Face	Book Price	Market Price	Gain / Loss	Book Yield	Avg. Life	Eff. Dur.
Current Portfolio	**335,416**	**102.70**	**104.73**	**6,823**	**3.14**	**4.8**	**3.3**
Security Sales	25,130	101.78	103.41	410	2.41	3.7	3.4
Portfolio Post-Sales	**310,823**	**102.78**	**104.84**	**6,413**	**3.19**	**4.9**	**3.2**
ProForma Portfolio	**310,823**	**102.78**	**104.84**	**6,413**	**3.19**	**4.9**	**3.2**

Liability Summary	Par Amount		Market Price	Gain / Loss	Rate	Rem. Mat.	Eff. Dur.
Current Portfolio	**125,000**		**101.63**	**(2,032)**	**2.54**	**1.6**	**1.6**
Liabilities Paid Off	25,000		101.63	(408)	3.03	1.1	1.1
Proforma Portfolio	**100,000**	**0**	**101.62**	**(1,625)**	**2.41**	**1.7**	**1.7**

Net Interest Margin Impact	0.03%

(1) Book Prices and Funding Data provided by sample bank as of 9/30/2019, Beginning Data provided by SNL as of 6/302019
(2) Estimated prepayment penalty per Stifel Fixed Income as of 10/4/2019 and may not represent executable levels
(3) Market Prices provided by Stifel's Fixed Income Proprietary Pricing Matrix as of 10/4/2019 and may not represent executable levels
(4) Strategies presented do not represent an exhaustive list – there are a number of alternative scenarios that may produce different results

Strategy 2: Deleverage Transaction Detail

Asset Summary - Strategy Sales							
Category	Current Face	Book Price	Market Price	Book Yield	WAL	Eff Dur	Gain / Loss
Treasury/Agency	-	-	-	-	-	-	-
MBS Fixed	3,335,370	104.08	103.80	2.09	3.0	2.3	(9,252)
ARM	-	-	-	-	-	-	-
CMO Fixed	-	-	-	-	-	-	-
CMO Floating	-	-	-	-	-	-	-
Agency CMBS	-	-	-	-	-	-	-
Small Business	-	-	-	-	-	-	-
Private Label	-	-	-	-	-	-	-
Municipal	6,450,000	101.93	103.56	2.44	4.7	4.2	104,922
Corporate	15,500,000	101.31	102.08	2.30	2.2	2.1	120,092
Total	**25,285,370**	**101.83**	**102.69**	**2.31**	**3.0**	**2.7**	**215,763**

Liability Summary - Strategy Unwinds							
Category	Par Amount	Rate	Unwind Price	Maturity	Duration		Gain / Loss
					Flat	+300	
FHLB Bullet 1	-	-	-	-	-	-	-
FHLB Bullet 2	25,000,000	2.80	100.84	7/6/2020	0.7	0.7	(209,500)
FHLB Bullet 3	-	-	-	-	-	-	-
FHLB Bullet 4	-	-	-	-	-	-	-
FHLB Bullet 5	-	-	-	-	-	-	-
Total	**25,000,000**	**2.80**	**100.84**	**7/6/2020**	**0.7**	**0.7**	**(209,500)**

Portfolio Summary	Current Face	Book Price	Market Price	Gain / Loss	Book Yield	Avg. Life	Eff. Dur.
Current Portfolio	**335,416**	**102.70**	**104.73**	**6,823**	**3.14**	**4.8**	**3.3**
Security Sales	25,285	101.83	102.69	216	2.31	3.0	2.7
Portfolio Post-Sales	**310,829**	**102.78**	**104.90**	**6,607**	**3.20**	**4.9**	**3.3**
ProForma Portfolio	**310,829**	**102.78**	**104.90**	**6,607**	**3.20**	**4.9**	**3.3**

Liability Summary	Par Amount		Market Price	Gain / Loss	Rate	Rem. Mat.	Eff. Dur.
Current Portfolio	**125,000**		**101.63**	**(2,032)**	**2.54**	**1.6**	**1.6**
Liabilities Paid Off	25,000		100.84	(209)	2.80	0.7	0.7
Proforma Portfolio	**100,000**	**0**	**101.82**	**(1,823)**	**2.47**	**1.8**	**1.8**

Net Interest Margin Impact	0.03%

(1) Book Prices and Funding Data provided by sample bank as of 9/30/2019, Beginning Data provided by SNL as of 6/302019
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Strategy 3: Deleverage Transaction Detail

Asset Summary - Strategy Sales							
Category	Current Face	Book Price	Market Price	Book Yield	WAL	Eff Dur	Gain / Loss
Treasury/Agency	2,500,000	95.62	102.22	3.34	3.7	3.5	164,884
MBS Fixed	9,897,663	104.55	103.71	2.28	4.9	3.2	(83,732)
ARM	-	-	-	-	-	-	-
CMO Fixed	4,792,526	101.98	102.51	2.61	2.5	1.0	25,231
CMO Floating	-	-	-	-	-	-	-
Agency CMBS	-	-	-	-	-	-	-
Small Business	-	-	-	-	-	-	-
Private Label	-	-	-	-	-	-	-
Municipal	14,565,000	104.15	106.96	2.66	6.3	5.8	409,077
Corporate	17,000,000	101.31	101.91	2.29	2.3	2.2	101,931
Total	**48,755,189**	**102.59**	**103.86**	**2.48**	**4.1**	**3.5**	**617,391**

Liability Summary - Strategy Unwinds							
Category	Par Amount	Rate	Unwind Price	Maturity	Duration		Gain / Loss
					Flat	+300	
FHLB Bullet 1	-	-	-	-	-	-	-
FHLB Bullet 2	25,000,000	2.80	100.84	7/6/2020	0.7	0.7	(209,500)
FHLB Bullet 3	25,000,000	3.03	101.63	11/20/2020	1.1	1.1	(407,508)
FHLB Bullet 4	-	-	-	-	-	-	-
FHLB Bullet 5	-	-	-	-	-	-	-
Total	**50,000,000**	**2.92**	**101.23**	**9/12/2020**	**0.9**	**0.9**	**(617,008)**

Portfolio Summary	Current Face	Book Price	Market Price	Gain / Loss	Book Yield	Avg. Life	Eff. Dur.
Current Portfolio	**335,416**	**102.70**	**104.73**	**6,823**	**3.14**	**4.8**	**3.3**
Security Sales	48,755	102.59	103.86	617	2.48	4.1	3.5
Portfolio Post-Sales	**286,678**	**102.72**	**104.88**	**6,205**	**3.25**	**4.9**	**3.2**
ProForma Portfolio	**286,678**	**102.72**	**104.88**	**6,205**	**3.25**	**4.9**	**3.2**

Liability Summary	Par Amount		Market Price	Gain / Loss	Rate	Rem. Mat.	Eff. Dur.
Current Portfolio	**125,000**		**101.63**	**(2,032)**	**2.54**	**1.6**	**1.6**
Liabilities Paid Off	50,000		101.23	(617)	2.92	0.9	0.9
Proforma Portfolio	**75,000**	**0**	**101.89**	**(1,415)**	**2.29**	**2.1**	**2.0**

Net Interest Margin Impact	0.06%

(1) Book Prices and Funding Data provided by sample bank as of 9/30/2019, Beginning Data provided by SNL as of 6/302019
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Releverage Assumptions

- Funding is a 50/50 mix of 3 month borrowing and 3 year borrowing with the details shown below.

Cpn	Maturity	Original Par	Current Par	Book Price	Market Price	G/L ($)	G/L (%)	% Px Δ +300	Eff Dur	Eff Cvx	Speed	Book Yld (Exp)	Avg. Life	Book YTW
1.65	10/06/2022	$25,000,000	$25,000,000	100.00	100.00	$0	0.0%	-8.3%	2.9	0.1		1.65%	3.0	1.65%
2.00	01/07/2020	$25,000,000	$25,000,000	100.00	100.00	$0	0.0%	-0.8%	0.3	0.0		2.02%	0.3	2.02%
1.83		$50,000,000	$50,000,000	100.00	100.00	$0	0.0%	-4.5%	1.6	0.1		1.84%	1.6	1.84%

- The securities construction is also a barbell strategy, composed of SBA floaters, MBS, Multifamily, and taxable municipal debentures.

Securities Purchased

CUSIP	Security Description	Sector	Cpn	Maturity	Original Par	Current Par	Book Price	Market Price	G/L ($)	G/L (%)	% Px Δ +300	Eff Dur	Eff Cvx	Speed	Book Yld (Exp)	Avg. Life	Book YTW
3140QB4Q8	FN CA4430	30yr Fixed MBS	3.50	10/01/2049	$9,561,144	$9,561,144	104.59	104.59			-15.7%	2.6	-1.8	16cpr	2.47%	5.2	2.47%
3140HUBT2	FN-BL2749	DUS	3.55	06/01/2029	$9,294,112	$9,294,112	107.60	107.60			-21.0%	8.0	0.8	0cpr	2.67%	9.4	2.67%
83165A5D2	SBA522444	SBA Floater	6.38	02/25/2036	$10,439,236	$8,898,380	112.38	112.38			-4.1%	0.6	0.0	13cpr	2.97%	5.1	2.97%
83165ATK0	SBA522154	SBA Floater	6.76	04/25/2027	$21,425,289	$9,153,318	109.25	109.25			-2.0%	0.5	0.0	15cpr	2.61%	2.9	2.61%
9151375E9	UNIVERSITY TEX UNIV	Taxable REV	5.09	08/15/2030	$8,198,065	$8,198,065	121.98	121.98			-19.9%	7.5	0.7		2.40%	9.2	2.40%
Buy Side Total			5.03		$58,917,845	$45,105,019	110.85	110.85			-12.6%	3.8	-0.1		2.63%	6.3	2.63%
Difference			3.20		$8,917,845	-$4,894,981	10.85	10.85			-8.0%	2.3	-0.1		0.79%	4.7	0.79%

- The differences between funding and securities for average life and % change in market value is illustrated below.

	Average Life							% Market Price Change						
	-200	-100	Base	+100	+200	+300	+400	-200	-100	Base	+100	+200	+300	+400
Difference	4.5	4.4	4.7	5.3	5.4	5.6	5.8	3.5%	2.9%	0.0%	-2.7%	-5.5%	-8.0%	-10.4%

(1) Book Prices and Funding Data provided by sample bank as of 9/30/2019, Beginning Data provided by SNL as of 6/302019
(2) Estimated prepayment penalty per Stifel Fixed Income as of 10/4/2019 and may not represent executable levels
(3) Market Prices provided by Stifel's Fixed Income Proprietary Pricing Matrix as of 10/4/2019 and may not represent executable levels
(4) Strategies presented do not represent an exhaustive list – there are a number of alternative scenarios that may produce different results

Strategy 6: Deleverage/Releverage Transaction Detail

- The deleverage from Strategy 3 is paired with the previously described releverage below.

	Baseline	Step 1: Delever		Step 2: Relever		Change vs.
		Proforma	Δ	Proforma	Δ	Baseline
Impact on Capital						**Cumulative**
Tier 1 Leverage	10.57%	10.69%	*0.12%*	10.57%	*(0.12)%*	0.00%
CET1 Risk Based	12.02%	12.07%	*0.06%*	12.05%	*(0.03)%*	0.03%
Tier 1 Risk Based	12.02%	12.07%	*0.06%*	12.05%	*(0.03)%*	0.03%
Total Risk Based	13.71%	13.77%	*0.06%*	13.74%	*(0.03)%*	0.03%
Tangible Equity Ratio	10.64%	10.75%	*0.11%*	10.64%	*(0.12)%*	(0.01)%
TCE / TA	10.64%	10.75%	*0.11%*	10.64%	*(0.12)%*	(0.01)%
Impact on Earnings						
Net Interest Income	165,048	165,264	*216*	165,659	*395*	611
Net Income	50,734	50,905	*171*	51,217	*312*	483
Net Interest Margin	4.30%	4.37%	*0.06%*	4.32%	*(0.05)%*	0.02%
Return on Assets	1.18%	1.20%	*0.02%*	1.19%	*(0.01)%*	0.01%
Return on Equity	8.91%	8.95%	*0.04%*	9.00%	*0.05%*	0.09%
Pre-Tax Gain / (Loss)		0	*0*	0	*0*	
After Tax Gain / (Loss)		0	*0*	0	*0*	
Cost of Funds	1.32%	1.31%	*-0.01%*	1.31%	*0.00%*	*-0.01%*

Step 2: Leverage Detail		
Amount	50,000	
Asset Yield	2.63%	Securities
Risk Weight	18%	Securities
Flat Price	100.00	Securities
+300 Price	87.40	Securities
Funding Cost	1.84%	Funding
Flat Price	100.00	Funding
+300 Price	95.50	Funding

(1) Book Prices and Funding Data provided by sample bank as of 9/30/2019, Beginning Data provided by SNL as of 6/302019
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NII and EVE Impacts: Deleverage/Releverage

- The deleverage/releverage strategy has negligible impact to either NII or EVE.

				Post $50mm Deleverage Strategy 3		Post $50mm Releverage Strategy 6	
	12 mo NII	Change	%Chg	12 mo NII	%Chg	12 mo NII	%Chg
+400	181,928.00	(1,547.00)	-0.84%	182,178.00	-0.81%	182,452.00	-0.90%
+300	182,598.00	(877.00)	-0.48%	182,815.00	-0.46%	183,116.00	-0.53%
+200	183,301.00	(174.00)	-0.09%	183,487.00	-0.09%	183,814.00	-0.16%
+100	183,679.00	204.00	0.11%	183,855.00	0.11%	184,264.00	0.09%
Level	183,475.00	-		183,658.00	0.00%	184,100.00	0.00%
-100	182,872.00	(603.00)	-0.33%	183,077.00	-0.32%	183,540.00	-0.30%
-200	178,791.00	(4,684.00)	-2.55%	178,996.00	-2.54%	179,459.00	-2.52%
	EVE	Change	%Chg	EVE	%Chg	EVE	%Chg
+400	647,181.00	18,412.00	2.93%	650,931.00	3.52%	648,681.00	3.17%
+300	646,369.00	17,600.00	2.80%	649,119.00	3.24%	647,369.00	2.96%
+200	645,897.00	17,128.00	2.72%	647,747.00	3.02%	646,547.00	2.83%
+100	640,940.00	12,171.00	1.94%	641,840.00	2.08%	641,290.00	1.99%
Level	628,769.00	-	0.00%	628,769.00	0.00%	628,769.00	0.00%
-100	606,762.00	(22,007.00)	-3.50%	605,962.00	-3.63%	606,612.00	-3.52%
-200	552,890.00	(75,879.00)	-12.07%	551,890.00	-12.23%	552,490.00	-12.13%

$50mm Deleverage then Releverage creates little to no impact to overall interest rate risk.

(1) Book Prices and Funding Data provided by sample bank as of 9/30/2019, Beginning Data provided by SNL as of 6/302019
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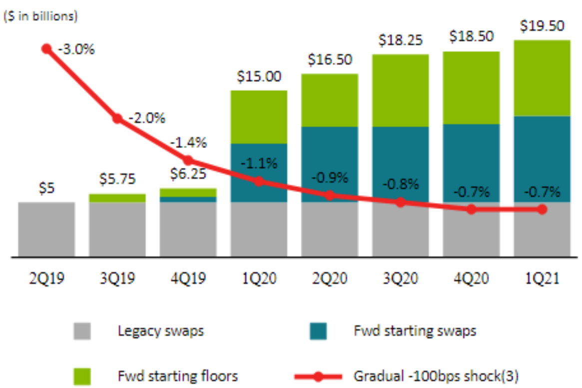
- Fed Funds Easing Cycle
- Investment Portfolio Considerations
- HTM Reclassification
- Deleverage Considerations
- Releverage Considerations
- ***Hedging Applications***
- Whole Loan Market Update
- Regulatory & Accounting Update
- LIBOR Transition

Broad Focus by Depositories on Rates Down Hedging

Regions Financial (RF)

Proactive hedging strategy reduces sensitivity over time

Notional cash flow derivatives designated for hedging(1)



Key Bancorp (KEY)

Positioning

- **Actively hedging to reduce current and future exposure to declining rates**
  - Executed ~$3B in interest rate swaps and floors in 2Q19
  - ~$15B in hedge executions since 3Q18 significantly reduced declining rate exposure
- **Reducing asset sensitivity as the curve flattens and economic growth slows**
  - Lower level of exposure due to a more balanced rate outlook
  - Net interest income upside as reinvestment rates continue to exceed run off rates for fixed rate loans and securities
  - Higher deposit betas have reduced the benefit to rising short term interest rates

Balanced interest rate risk position:
NII impact of less than 1% for a 100 bps parallel increase or decrease from current rate levels over 12 months

Comerica Inc (CMA)

Hedging Activity[2]:

- $2.8B (pay floating/receive fixed) hedges
  - 3.3 year average term
  - 2.23% average fixed rate
- Expect to reduce the unfavorable impact on net interest income from a 200bps drop in rates (100 bps on average) by ~$30MM

ZIONS Bancorp (ZION)

Zions has been actively reducing interest rate sensitivity:

- $3.5 billion of interest rate floors as of 2Q19
- $2.3 billion of interest rate swaps as of 2Q19

Zions may add additional floors and swaps to hedge interest rate risk in preparation for further declines in benchmark interest rates

Comprehensive Rates Down Approach Examples

- **PNFP**: cumulative $2.8B strategy, 11% of $26.5B asset size
- **VBTX**: cumulative $930mm strategy, 12% of $8.0B asset size

Pinnacle Financial Partners (PNFP)

Net Interest Margin Influences Top and Bottom Line Growth

PNFP has taken actions to better position for declining rates

***Actions taken in 2Q19 to lessen interest rate risk exposure during 2019*:**

- **Unwound $900mm of fixed-to-floating loan interest rate swaps**
- **Purchased $1.3B of interest rate floors**
- **Restructured $600mm of bonds; decreasing variable-rate exposure from 40% of investment securities to 30%**
- **Shortened duration of wholesale funding – At June 30, 75% of wholesale funding refinances within one year compared to 60% at March 31**
- **Sales force contacting depositors about potential downrate environment**

Veritex Holdings (VBTX)

Rate Impact and Actions Taken

1. During Q2, purchased $275 million of 1 month Libor interest rate floors with a strike rate of 2.43% and restructured $255 million of bonds, extending duration, picking up yield and decreasing our variable-rate exposure to just under 7%. This step removed 20% of the impact from a down 100 rate move. See static shock graph below.
2. Subsequent to quarter end, entered into $400 million of floating rate and structured borrowings at a blended rate of 1.46% to replace high cost funding including our corresponding money market. While not affecting the interest rate risk profile, this step is estimated to add approximately 5 bps to NIM before the impact of falling rates.
3. Customer specific plans in place for falling rate environment focused on retaining strong relationships and limiting impact to franchise value.
4. Note the variable rate loan floor table below which shows the percentage of loans with floors and the spread to the floor.

(1) Source: 2Q19 Investor Presentations

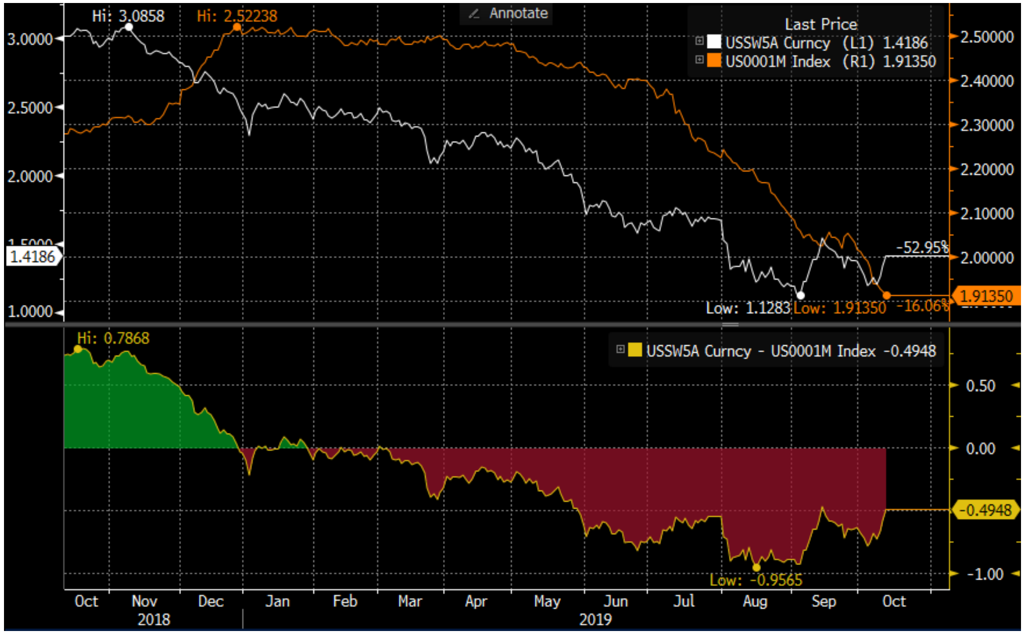
Receive Fixed Swaps

Current fixed rates 46-57 bps below Libor

Indicative Swap Rates

Tenor	Receive Fixed Swap Rate[1]	1m LIBOR	Initial Carry (bps)
2y	1.419	1.914	-49
3y	1.372	1.914	-54
4y	1.350	1.914	-56
5y	1.347	1.914	-57
7y	1.380	1.914	-53
10y	1.454	1.914	-46

Historical Spread: 5y Swap Rate vs 1mL[2]



- We generally recommend evaluating the swap for a ***portion*** of the floating rate loan book in order to avoid potential hedge accounting issues should the loan pool notional fall below the swapped notional amount.

STIFEL

(1) *Indicative levels as of 10/11/19*
(2) *Source: Bloomberg*

Receive Fixed Swap Structures
Income and Market Value Impact

Illustrative Swap Structures

Accretion in rates down

Tenor	Receive Fixed Swap Rate	1mL	Initial Carry (bps)	Income Accretion Notional	Level Rates	Down 100	Up 100
2y	1.419	1.914	-49	100mm	-501	513	-1,515
3y	1.372	1.914	-54	100mm	-549	465	-1,563
4y	1.350	1.914	-56	100mm	-571	443	-1,585
5y	1.347	1.914	-57	100mm	-574	440	-1,588
7y	1.380	1.914	-53	100mm	-541	473	-1,555
10y	1.454	1.914	-46	100mm	-466	548	-1,480

($000s)

As shown above, $100mm receive fixed swaps will provide accretion if 1 month LIBOR were to move down by more than ~46-57bps.

(% Chg in Swap Market Value)

Passage of time mitigates market value risk

Tenor	Immediate -200	-100	+100	+200	1y Horizon -200	-100	+100	+200
2y	3.5	1.7	-1.7	-3.4	2.1	1.1	-0.9	-1.9
3y	5.5	2.7	-2.6	-5.2	4.2	2.2	-1.8	-3.7
4y	7.9	3.9	-3.7	-7.3	6.7	3.4	-2.9	-5.8
5y	9.9	4.8	-4.6	-8.9	8.6	4.3	-3.8	-7.6
7y	13.9	6.7	-6.2	-12.0	12.6	6.2	-5.5	-10.8
10y	19.7	9.3	-8.5	-16.1	18.3	8.8	-7.9	-15.2

The receive fixed swaps would incur market value declines in rising rate environments. However, the passage of time mitigates this potential impact as the swap's remaining maturity shortens through time.

(1) Indicative levels as of 10/11/2019

Interest Rate Floors

Immediate versus down 100 protection for 2 years

Immediate protection for 2 years

- 1.14% upfront premium
- 59 bps/year average amortization (23 months)
- 59 bps breakeven point
- 132 bps/year potential payoff

		Long Floor:				Hedged with Floor			vs. Hedged with Swap:		
Scenario	1mL	Amortize floor premium	Floor coupon income	Net floor inc/(exp)	Chg from base	Loan income	Hedge	Net	Loan income	Hedge	Net
Level	1.914	-0.59%	0.00%	-0.59%	0.00%	4.41%	-0.59%	3.82%	4.41%	-0.49%	3.92%
	1.664	-0.59%	0.25%	-0.34%	0.25%	4.16%	-0.34%	3.82%	4.16%	-0.24%	3.92%
	1.414	-0.59%	0.50%	-0.09%	0.50%	3.91%	-0.09%	3.82%	3.91%	0.01%	3.92%
	1.164	-0.59%	0.75%	0.16%	0.75%	3.66%	0.16%	3.82%	3.66%	0.26%	3.92%
Dn 100	0.914	-0.59%	1.00%	0.41%	1.00%	3.41%	0.41%	3.82%	3.41%	0.51%	3.92%
	0.664	-0.59%	1.25%	0.66%	1.25%	3.16%	0.66%	3.82%	3.16%	0.76%	3.92%
	0.414	-0.59%	1.50%	0.91%	1.50%	2.91%	0.91%	3.82%	2.91%	1.01%	3.92%
	0.164	-0.59%	1.75%	1.16%	1.75%	2.66%	1.16%	3.82%	2.66%	1.26%	3.92%
Dn 200	-0.087	-0.59%	2.00%	1.41%	2.00%	2.41%	1.41%	3.82%	2.41%	1.51%	3.92%

Down 100 protection for 2 years

- 0.29% upfront premium
- 15 bps/year average amortization
- 115 bps breakeven point
- 76 bps/year potential payoff

		Long Floor:				Hedged with Floor			vs. Hedged with Swap:		
Scenario	1mL	Amortize floor premium	Floor coupon income	Net floor inc/(exp)	Chg from base	Loan income	Hedge	Net	Loan income	Hedge	Net
Level	1.914	-0.15%	0.00%	-0.15%	0.00%	4.41%	-0.15%	4.26%	4.41%	-0.49%	3.92%
	1.664	-0.15%	0.00%	-0.15%	0.00%	4.16%	-0.15%	4.01%	4.16%	-0.24%	3.92%
	1.414	-0.15%	0.00%	-0.15%	0.00%	3.91%	-0.15%	3.76%	3.91%	0.01%	3.92%
	1.164	-0.15%	0.00%	-0.15%	0.00%	3.66%	-0.15%	3.51%	3.66%	0.26%	3.92%
Dn 100	0.914	-0.15%	0.00%	-0.15%	0.00%	3.41%	-0.15%	3.26%	3.41%	0.51%	3.92%
	0.664	-0.15%	0.25%	0.10%	0.25%	3.16%	0.10%	3.26%	3.16%	0.76%	3.92%
	0.414	-0.15%	0.50%	0.35%	0.50%	2.91%	0.35%	3.26%	2.91%	1.01%	3.92%
	0.164	-0.15%	0.75%	0.60%	0.75%	2.66%	0.60%	3.26%	2.66%	1.26%	3.92%
Dn 200	-0.087	-0.15%	1.00%	0.85%	1.00%	2.41%	0.85%	3.26%	2.41%	1.51%	3.92%

(1) Loan income assumes 1mL + 250 bps spread
(2) Indicative levels as of 10/11/19

Interest Rate Floors

Immediate versus down 100 protection for 5 years

Immediate protection for 5 years

- 3.78% upfront premium
- 77 bps/year average amortization (59 months)
- 77 bps breakeven point
- 114 bps/year potential payoff

		Long Floor:				Hedged with Floor			vs. Hedged with Swap:		
Scenario	1mL	Amortize floor premium	Floor coupon income	Net floor inc/(exp)	Chg from base	Loan income	Hedge	Net	Loan income	Hedge	Net
Level	1.914	-0.77%	0.00%	-0.77%	0.00%	4.41%	-0.77%	3.64%	4.41%	-0.57%	3.85%
	1.664	-0.77%	0.25%	-0.52%	0.25%	4.16%	-0.52%	3.64%	4.16%	-0.32%	3.85%
	1.414	-0.77%	0.50%	-0.27%	0.50%	3.91%	-0.27%	3.64%	3.91%	-0.07%	3.85%
	1.164	-0.77%	0.75%	-0.02%	0.75%	3.66%	-0.02%	3.64%	3.66%	0.18%	3.85%
Dn 100	0.914	-0.77%	1.00%	0.23%	1.00%	3.41%	0.23%	3.64%	3.41%	0.43%	3.85%
	0.664	-0.77%	1.25%	0.48%	1.25%	3.16%	0.48%	3.64%	3.16%	0.68%	3.85%
	0.414	-0.77%	1.50%	0.73%	1.50%	2.91%	0.73%	3.64%	2.91%	0.93%	3.85%
	0.164	-0.77%	1.75%	0.98%	1.75%	2.66%	0.98%	3.64%	2.66%	1.18%	3.85%
Dn 200	-0.087	-0.77%	2.00%	1.23%	2.00%	2.41%	1.23%	3.64%	2.41%	1.43%	3.85%

Down 100 protection for 5 years

- 1.36% upfront premium
- 28 bps/year average amortization
- 128 bps breakeven point
- 63 bps/year potential payoff

		Long Floor:				Hedged with Floor			vs. Hedged with Swap:		
Scenario	1mL	Amortize floor premium	Floor coupon income	Net floor inc/(exp)	Chg from base	Loan income	Hedge	Net	Loan income	Hedge	Net
Level	1.914	-0.28%	0.00%	-0.28%	0.00%	4.41%	-0.28%	4.14%	4.41%	-0.57%	3.85%
	1.664	-0.28%	0.00%	-0.28%	0.00%	4.16%	-0.28%	3.89%	4.16%	-0.32%	3.85%
	1.414	-0.28%	0.00%	-0.28%	0.00%	3.91%	-0.28%	3.64%	3.91%	-0.07%	3.85%
	1.164	-0.28%	0.00%	-0.28%	0.00%	3.66%	-0.28%	3.39%	3.66%	0.18%	3.85%
Dn 100	0.914	-0.28%	0.00%	-0.28%	0.00%	3.41%	-0.28%	3.14%	3.41%	0.43%	3.85%
	0.664	-0.28%	0.25%	-0.03%	0.25%	3.16%	-0.03%	3.14%	3.16%	0.68%	3.85%
	0.414	-0.28%	0.50%	0.22%	0.50%	2.91%	0.22%	3.14%	2.91%	0.93%	3.85%
	0.164	-0.28%	0.75%	0.47%	0.75%	2.66%	0.47%	3.14%	2.66%	1.18%	3.85%
Dn 200	-0.087	-0.28%	1.00%	0.72%	1.00%	2.41%	0.72%	3.14%	2.41%	1.43%	3.85%

(1) Loan income assumes 1mL + 250 bps spread
(2) Indicative levels as of 10/11/19

Relevant Accounting Guidance: Cash Flow Hedge of Floating Loans

For loans that are tied to a contractually specified interest rate (i.e., 1 Mo LIBOR or PRIME), spreads do not have to be consistent across the loan pool since you are only hedging the risk of changes in the contractually specified interest rate:

Accounting Guidance ASC 815-20-25-15	A forecasted transaction is eligible for designation as a hedged transaction in a cash flow hedge if all of the following additional criteria are met: j. If the hedged transaction is the forecasted purchase or sale of a financial asset or liability (or the interest payments on that financial asset or liability) or the variable cash inflow or outflow of an existing financial asset or liability, the designated risk being hedged is any of the following: ***2.*** For forecasted interest receipts or payments on an existing variable-rate financial instrument, the risk of changes in its cash flows attributable to changes in the contractually specified interest rate (referred to as interest rate risk). For a forecasted issuance or purchase of a debt instrument (or the forecasted interest payments on a debt instrument), the risk of changes in cash flows attributable to changes in the benchmark interest rate or the expected contractually specified interest rate. See paragraphs 815-20-25-19A through 25-19B for further guidance on the designation of interest rate risk in the forecasted issuance or purchase of a debt instrument.

Rather than hedging a specified group of individual floating rate loans aggregating up to a cumulative principal amount, it is preferred to use the "first-payments-received" technique:

Ernst & Young Commentary First-Payments-Received Technique	In some cases, an entity may be unable to identify the exact source or recipient of the cash flows it wants to designate as the hedged item. In these instances, the entity may still be able to designate the forecasted transaction(s) in a manner that meets ASC 815's requirements that the hedged forecasted transactions be described with sufficient specificity so that when a transaction occurs, it is clear whether that transaction is or is not the hedged transaction. This can be done through a hedge designation approach that is commonly referred to as the "first-payments-received" technique. This approach is illustrated in the example provided in ASC 815-20-55-88 through 55-96. In this example, Entity A is looking to hedge the cash flow variability associated with a group of variable-rate loans. Entity A identifies the hedged forecasted transactions as the first LIBOR-based interest payments received during each four-week period (as defined) over the next three years. The amount of the forecasted interest payments designated as being hedged each period is based on a $100 million principal of its then existing LIBOR-indexed floating-rate loans. Any LIBOR-based interest payments received by Entity A after it has received payments on $100 million aggregate principal would be unhedged interest payments for that period.

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- Regulatory & Accounting Update
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Trends and Color for the Whole Loan Market – 2019 Q3 Review

Residential Summary*

PRODUCT	CURRENT PRICING	SIX MONTHS AGO	ONE YEAR AGO
Performing *(Jumbo and Conforming roughly equal unless otherwise noted.)*	Fixed-rate spreads ballpark 300 behind TBAs; Street says inside of 200 but getting wider. 7/1s getting traction in the 3.5-3.7% range at 15 CPB; Street says 3.0%-3.25%.	Fixed-rate spreads still 275-325 behind TBAs although the Street says inside of 200. 7/1s still 4.0% -4.25% range at 15 CPB; Street says below 3.5%.	Fixed-rate spreads just a little wider at 275-325 behind TBAs. Big change for 7/1s with buy-yields moving from 3.3-3.4% at 15 CPB to 4.0%.
Scratch & Dent, RPL	RPLs generally trading in the low 5%s down from mid to high 5%s and a Q2 FNMA sale at about 6.5%.	RPLs now back in the 5%s after the brief rise towards 6% at the end of the year, but not for FNMA's sale.	Major increase in buy-yields with observations of 6% on GSE sales, up from 4.9% in Q2. Small private sector trades likely to price in the 85-92 range.

- Increasing number of depositories took advantage of the lower rate environment to sell seasoned loan portfolios for a premium, several looking to book gains in the 4th quarter similarly.

Commercial

Performing Commercial (CRE) and Multifamily (MF): The desk saw the lowest yielding CRE and MF trades in recent memory this quarter. For example, loans secured by CRE with Walgreens and CVS style triple net leases (NNN) traded to buy-yields as low as 3.5% as spreads over swaps bounced around in the 160-225 range. Some hybrid ARM MF portfolios actually traded in the 3.0-3.25% BEY range, but as the quarter came to a close, 3.25-3.5% BEYs looked to be a more realistic bet. Meanwhile, the California gas station Member Business Loan (MBL), mentioned in the second quarter, traded at a 3.95% yield. Even a few hotel loans traded to mid-four yields. In sum, demand for CRE and MF remains strong with fourth quarter gains awaiting most sellers, buy-yields seem to be following the treasury market but with a lag, and underwriting standards show no signs of tightening.

Construction and Bridge, Story and Non-Performing: A wide variety of construction loans were available for purchase in the third quarter. Yields ranged from the high fours to prime + 1% (6.25%), largely driven by loan to cost (LTC) considerations and guarantor strength. Most tended to come with a 24-month IO period and a ballpark 70% LTC, and the desk saw more hospitality and multifamily opportunities than other asset classes. Bids for SBA 504s remained strong, often landing in the 102+ area, although very few 504 portfolios were available for sale (SBA 504s are 50% LTV first liens). Several desk clients would like to buy $10 million or more 504s before year-end. The majority of distressed CRE loans seen in the market came from special servicers by way of liquidations from legacy securitizations, with pricing staying more or less at post-bubble highs: for LTVs › 100%, 65-70% of BPO in judicial foreclosure states and 70-75% in non-judicial states.

- Fed Funds Easing Cycle
- Investment Portfolio Considerations
- HTM Reclassification
- Deleverage Considerations
- Releverage Considerations
- Hedging Applications
- Whole Loan Market Update
- ***Regulatory & Accounting Update***
- LIBOR Transition

Community Bank Leverage Ratio

CBLR:

- Less than 10 billion in total consolidated assets
- CBLR now looks very much like Tier 1 Leverage calculation

The rule is effective January 1, 2020.

<u>What is the impact of the CBLR?</u>

- Satisfaction of the CBLR removes the requirement for the institution to follow the remaining risk based capital calculations (assumes their satisfaction as well).
- Key change in final rule from the proposal is to utilize tier 1 capital in the numerator vs "tangible equity". Allows for inclusion of legacy issued trust preferred instruments if relevant.

Community Bank Leverage Ratio (CBLR) Framework	
Qualifying Community Banking Organization	• Leverage ratio greater than 9 percent • Less than $10 billion in average total consolidated assets • Off-balance-sheet exposures of 25 percent or less of total consolidated assets • Trading assets plus trading liabilities of 5 percent or less of total consolidated assets • Not an advanced approaches banking organization
Calculation of the Leverage Ratio	Tier 1 capital / Average total consolidated assets
Leverage Ratio Requirement	Greater than 9 percent
Grace Period	A two-quarter grace period (which begins at of the end of the calendar quarter in which the electing banking organization ceases to satisfy any of the qualifying criteria) to either meet the qualifying criteria again or to comply with the generally applicable capital rule. • Grace period applies when a banking organization's leverage ratio is 9 percent or less but greater than 8 percent. • A banking organization that fails to maintain a leverage ratio greater than 8 percent would not be permitted to use the grace period and must comply with the generally applicable capital rule, and file the appropriate regulatory reports. • Grace period does not apply in the case of a merger or acquisition.

(1) https://www.fdic.gov/regulations/resources/cbi/cblr-facts.pdf

Simplifications to Bank Capital Rules Finalized

- On 7/9/19, the agencies released a final rule raising the capital deduction limit on MSAs, temporary DTAs, and investments in the capital of unconsolidated financial institutions (trust preferreds, subordinated debt, and equities) from 10% to 25% of Common Equity Tier 1 (CET1).
- The originally proposed simplifications (first released in early 2017) are being finalized without modification with an **effective date of April 1, 2020** for the threshold increases and Risk Weight treatment.

> **III. Final Rule**
>
> **A. MSAs, Temporary Difference DTAs, and Investments in the Capital of Unconsolidated Financial Institutions**
>
> The simplification proposal would have set the 25 percent common equity tier 1 capital deduction threshold for MSAs, temporary difference DTAs, and investments in the capital of unconsolidated financial institutions to prevent, in a simple manner, unsafe and unsound concentration levels of these exposure categories in regulatory capital. The agencies believe that the 25 percent common equity tier 1 capital deduction threshold would have appropriately balanced risk-sensitivity and complexity for non-advanced approaches banking organizations.

What is the Impact of the Rule Change?

- As banks have increased their allocation in the investment portfolio to community bank sub debt issues, the degree of allocation has been limited to 10% of CET1
- Should allow for more flexibility within the investment portfolio and increased opportunities to find yield in a flat yield curve environment
- Banks that were subject to capital deductions likely will see relief given increase in threshold

(1) https://www.fdic.gov/news/board/2019/2019-05-28-notational-fr-a.pdf?source=govdelivery&utm_medium=email&utm_source=govdelivery

Community Banks Exempted from Volcker Rule

Banks are no longer subject to the Volcker Rule if they have:

- Less than 10 billion in total consolidated assets and
- Total trading assets and liabilities less than or equal to 5 percent of total consolidated assets.

The rule is effective upon publication in the federal register.

<u>What is the Impact of the Exemption?</u>

- The Volcker Rule placed limits on proprietary trading and investments in covered funds
- While its restrictions on regular business activities for community banks was relatively benign, it did restrict short-term trading in certain types of debt securities, non-risk mitigating activities, and certain investments in CLOs and CDOs

Joint Release

Board of Governors of the Federal Reserve System
Commodity Futures Trading Commission
Federal Deposit Insurance Corporation
Office of the Comptroller of the Currency
Securities and Exchange Commission

NR 2019-76
FOR IMMEDIATE RELEASE
July 9, 2019

Agencies Adopt Final Rule to Exclude Community Banks from the Volcker Rule

Five federal financial regulatory agencies announced on Tuesday that they adopted a final rule to exclude community banks from the Volcker Rule, consistent with the Economic Growth, Regulatory Relief, and Consumer Protection Act.

The Volcker Rule generally restricts banking entities from engaging in proprietary trading and from owning, sponsoring, or having certain relationships with hedge funds or private equity funds. Under the final rule, which is unchanged from the proposal, community banks with $10 billion or less in total consolidated assets and total trading assets and liabilities of 5 percent or less of total consolidated assets are excluded from the Volcker Rule.

The final rule also permits a hedge fund or private equity fund, under certain circumstances, to share the same name or a variation of the same name with an investment adviser as long as the adviser is not an insured depository institution, a company that controls an insured depository institution, or a bank holding company.

The final rule is being issued by the Federal Reserve Board, the Commodity Futures Trading Commission, the Federal Deposit Insurance Corporation, the Office of the Comptroller of the Currency, and the Securities and Exchange Commission.

(1) www.fdic.gov/news/board/2019/2019-06-18-notational-fr-a.pdf

Proposed Exclusion of Land Development Loans from HVCRE

In 2018, the agencies released a proposed rule regarding a change in the treatment of HVCRE

- Exposures must now meet both the existing HVCRE definition and this new "HVCRE ADC Loan" definition in order to receive punitive 150% risk weight, effective May 2018
- More narrowly defined purpose and structure: Not all ADC, but primarily to finance ADC to improve property to income-producing, with repayment dependent on income/refi/sale of property
- Same broad exclusions included in HVCRE ADC definition as in existing HVCRE: 1-4 family resi, community development, and agricultural purpose are exempt

On July 12, 2019 the agencies released a proposal for comment relating to the exclusion of land development loans for the purposes of one- to four- family residential properties from the definition of HVCRE exposure

- As defined in the call report instructions, a land development loan is a loan that finances the process of improving land, such as laying sewers, water pipes, and similar improvements to prepare the land for erecting new structures

What is the Impact of the Proposal?

- The proposed changes to the definition of HVCRE could allow for relief to institutions that have historically been scrutinized for a high percentage of HVCRE relative to total capital.

(1) https://www.fdic.gov/news/board/2019/2019-06-07-notational-fr-a.pdf

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Libor Discontinuance?

- July 27, 2017 Financial Conduct Authority's Chief Executive Andrew Bailey:

- *"**I and my colleagues have therefore spoken to all the current panel banks about agreeing voluntarily to sustain LIBOR for a four to five year period, i.e. until end-2021.** This date is far enough away significantly to reduce the risks and costs of a more sudden change. By having a date by which transition will need to be complete, however, we give market participants a schedule to plan to, and make it easier for them to engage as many counterparties and LIBOR users as is practicably possible in that planning. **Market participants must take responsibility for their individual transition plans, but we and other authorities will be ready to assist and support efforts to co-ordinate that work."***

- *"**In our view it is not only potentially unsustainable, but also undesirable, for market participants to rely indefinitely on reference rates that do not have active underlying markets to support them**. As well as an inherently greater vulnerability to manipulation when rates are based on judgements rather than the real price of term funding, there are a host of questions about whether and how such reference rates can respond to stressed market conditions. Again, I am not suggesting there are problems today, but we should act to deal with identified vulnerabilities."*

(1) https://www.fca.org.uk/news/speeches/the-future-of-libor

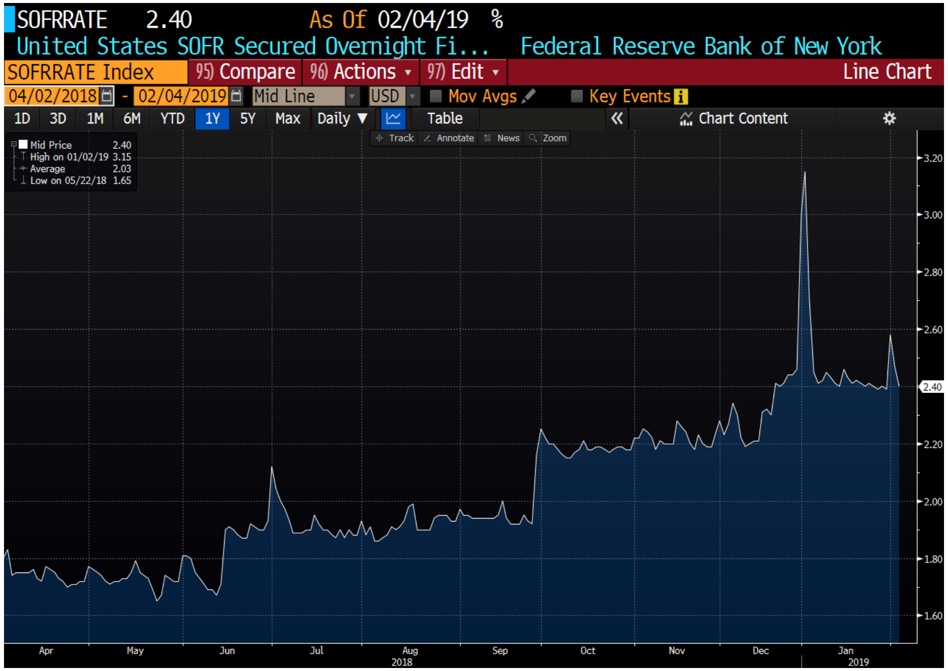
Fallback Provisions…Where to?

- In 2014, Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York convene the Alternative Reference Rates Committee (ARRC)
  - Identify an alternative reference rate for USD LIBOR
  - In 2017, ARRC suggests a broad Treasury repo rate known as the Secured Overnight Funding Rate (SOFR)
- Differences between SOFR and LIBOR create challenges
  - LIBOR
    - Multiple term contracts
    - Active futures market
    - Unsecured rate
  - SOFR
    - Overnight only
    - No term structure
    - Limited futures market currently
    - Secured rate
- International Swaps and Derivatives Association (ISDA) performed a range of surveys to determine fallback provisions for IBOR participants.

(1) https://www.isda.org/2018/12/20/isda-publishes-final-results-of-benchmark-fallback-consultation/

Fallback Provisions…Where to?

- ISDA suggested fallback provisions:
  - Daily rate compounded and set in arrears, to help in alignment to forward looking 1 month or 3 month LIBOR terms
    - This will assist with any singular day volatile periods
    - "US Federal Reserve May Need to Backstop the Repo Market, *BAML*"



- *"On Dec. 31, the Secured Overnight Financing Rate (SOFR), a gauge on overnight repo rates, jumped to 3.15 percent, which was 75 basis points above the interest on excess reserves (IOER), or what the Fed pays banks on the excess reserves they leave at the central bank. Prior to the year-end spike, SOFR was running one basis point to six basis points above IOER."*
- *""We believe the Fed will ultimately need to be the repo backstop of last resort after the banking system exhausts it willingness to swap reserves for (Treasury) repo," Cabana and Lima said."*

(1) https://www.isda.org/2018/12/20/isda-publishes-final-results-of-benchmark-fallback-consultation/
(2) https://www.reuters.com/article/us-usa-repos/u-s-federal-reserve-may-need-to-backstop-repo-market-baml-idUSKCN1P5273?utm_source=applenews
(3) Bloomberg L.P.

Continued SOFR Challenges

- Liquidity Issues – 9/17/19 – 9/19/19

- *“A second rate the Fed watches, the secured overnight financing rate, or SOFR, shot up to 5.25% on Tuesday from 2.43%. That is the median rate for $1.2 trillion in short-term funding transactions that occurred Tuesday. SOFR affects floating rates on about $285 billion outstanding in corporate and other loans.”[1]*

- *"If we experience another episode of pressures and money markets, we have the tools to address those pressures. We will not hesitate to use them," he said. Mr. Powell also added that growing the balance sheet purely for technical reasons may happen earlier than was once thought. Notably, a New York Fed report recently said that could start happening this year.”[2]*

(1) https://www.cnbc.com/2019/09/18/fed-loses-control-of-its-own-interest-rate-on-day-of-big-decision-this-just-doesnt-look-good.html
(2) https://www.wsj.com/livecoverage/federal-reserve-september-meeting-2019/card/1568833326

CME Futures Markets – Eurodollar (LIBOR) and SOFR

Month	Options	Charts	Last	Change	Prior Settle	Open	High	Low	Volume	Updated
OCT 2019	OPT		97.87	UNCH	97.87	97.855	97.885	97.85	52,275	13:14:35 CT 19 Sep 2019
NOV 2019	OPT		97.95	+0.01	97.94	97.92	97.955	97.91	28,970	12:56:30 CT 19 Sep 2019
DEC 2019	OPT		97.98	+0.015	97.965	97.95	97.99	97.94	358,203	13:14:58 CT 19 Sep 2019
JAN 2020	OPT		98.115	+0.015	98.10	98.10	98.115	98.095	2,954	12:56:43 CT 19 Sep 2019
FEB 2020	OPT		-	-	98.20	-	-	-	0	08:19:21 CT 19 Sep 2019
MAR 2020	OPT		98.265	+0.005	98.26	98.25	98.275	98.23	203,648	13:14:58 CT 19 Sep 2019
APR 2020	OPT		-	-	-	-	-	-	0	-
JUN 2020	OPT		98.38	+0.005	98.375	98.365	98.39	98.345	215,064	13:14:58 CT 19 Sep 2019
SEP 2020	OPT		98.465	+0.01	98.455	98.445	98.48	98.43	173,320	13:14:58 CT 19 Sep 2019
DEC 2020	OPT		98.47	+0.015	98.455	98.455	98.485	98.435	196,535	13:14:58 CT 19 Sep 2019
MAR 2021	OPT		98.56	+0.02	98.54	98.535	98.57	98.52	145,473	13:14:58 CT 19 Sep 2019

- Eurodollar Futures Quotes[1]
  - March 2020
    - Contracts 203,648

Month	Charts	Last	Change	Prior Settle	Open	High	Low	Volume	Updated
SEP 2019		98.0175	-0.0225	98.04	98.0575	98.0825	98.01	1,484	11:43:33 CT 19 Sep 2019
DEC 2019		98.32	UNCH	98.32	98.315	98.33	98.295	1,046	11:43:33 CT 19 Sep 2019
MAR 2020		98.48	-0.005	98.485	98.47	98.485	98.45	1,034	11:43:33 CT 19 Sep 2019
JUN 2020		98.565	+0.01	98.555	98.545	98.565	98.53	1,492	11:41:48 CT 19 Sep 2019
SEP 2020		98.645	+0.015	98.63	98.625	98.645	98.615	937	11:41:48 CT 19 Sep 2019
DEC 2020		98.695	+0.02	98.675	98.67	98.695	98.67	24	11:31:09 CT 19 Sep 2019
MAR 2021		98.73	+0.015	98.715	98.74	98.74	98.73	52	11:31:09 CT 19 Sep 2019

- CME Three-Month SOFR Futures Quotes[2]
  - March 2020
    - Contracts 1,034

(1) https://www.cmegroup.com/trading/interest-rates/stir/eurodollar.html
(2) https://www.cmegroup.com/trading/interest-rates/stir/three-month-sofr_quotes_globex.html

Fallback Provisions…Where to?

- ISDA suggested fallback provisions (cont'd):
  - Spread adjustment to capture difference between secured and unsecured rate to be a historical mean of the spread between indices at adoption.
  - Definition of a LIBOR discontinuance trigger event:
    - a public statement or publication of information by or on behalf of the administrator of LIBOR announcing that such administrator has ceased or will cease to provide LIBOR, permanently or indefinitely, provided that, at the time of the statement or publication, there is no successor administrator that will continue to provide LIBOR;
    - a public statement or publication of information by the regulatory supervisor for the administrator of LIBOR, the U.S. Federal Reserve System, an insolvency official with jurisdiction over the administrator for LIBOR, a resolution authority with jurisdiction over the administrator for LIBOR or a court or an entity with similar insolvency or resolution authority over the administrator for LIBOR, which states that the administrator of LIBOR has ceased or will cease to provide LIBOR permanently or indefinitely, provided that, at the time of the statement or publication, there is no successor administrator that will continue to provide LIBOR;

(1) https://www.isda.org/2018/12/20/isda-publishes-final-results-of-benchmark-fallback-consultation/

Fallback Provisions…Bilateral Loans

	Trigger	Replacement Reference Rate	Replacement Benchmark Spread (adjustment)	Mechanism to Amend Credit Agreement
Amendment Approach	A) Benchmark Discontinuance Event or B) Determination by Lender that new or amended bilateral loans are incorporating a new benchmark interest rate to replace LIBOR.	1) Alternate benchmark rate [set forth in applicable amendment] [agreed between Borrower and Lender] (which may include Term SOFR, to the extent publicly available quotes of Term SOFR exist at relevant time), giving due consideration to [i) market convention or ii)] selection, endorsement or recommendation by Relevant Governmental Body	A spread adjustment or method of calculating a spread adjustment set forth in applicable amendment, giving due consideration to [i) market convention or ii)] selection, endorsement or recommendation by Relevant Governmental Body	For Trigger A and B, amendment delivered by Lender to Borrower[, subject to negative consent by Borrower.]
Hardwired Approach	A) Benchmark Discontinuance Event or B) at least [two] outstanding publicly filed syndicated loans are priced over Term SOFR subject, in the case of Trigger (B), to negative consent by Borrower	A waterfall approach: 1) First, term SOFR or, if not available for the appropriate tenor, interpolated SOFR. If not available, then: 2) Compounded SOFR. If not available, then 3) Lender selects an alternate rate [giving due consideration to market convention or selection, endorsement or recommendation by Relevant Governmental Body].	A spread adjustment or method of calculating a spread adjustment that has been selected, endorsed or recommended by the Relevant Governmental Body. If not available, the spread adjustment or method for calculating the spread adjustment selected by ISDA. If Replacement Benchmark determined in accordance with clause 3 thereof, a spread adjustment selected by the Lender.	No consent of Borrower [unless Replacement Benchmark is determined in accordance with clause 3 thereof (Lender selects rate and spread)] in which case amendment will be subject to negative consent by Borrower.]

- Be mindful of the difference between these fallback provisions (for bilateral loans) and those suggested by ISDA (for derivatives). This can create both economic and accounting ineffectiveness in hedging structures

(1) https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Bilateral-Business-Loans-Consultation.pdf

FASB Exposure Draft – LIBOR Transition

"Reference Rate Reform (Topic 848)" – FASB Exposure Draft

- On September 5, 2019 FASB released Exposure Draft providing potential guidance for treatment of LIBOR reference index rates in existing contracts
  - Scope

848-10-15-3

The guidance in this Topic, if elected by an entity, shall apply to contracts or other transactions that reference the London Interbank Offered Rate (LIBOR) or a reference rate that is expected to be discontinued as a result of reference rate reform.

  - Contract modifications with related term adjustments will be treated as a modification that does not result in the de-recognition (or extinguishment) of a contract and initial recognition of a new contract
  - Related Terms
    - Changes to the referenced interest rate index
    - Changes for a spread adjustment for the difference between an existing reference rate and the replacement reference rate
    - Changes to the reset period, reset dates, day-count conventions, business-day conventions, payment dates and repricing calculations.
    - Changes to the strike price of an existing embedded derivative option.

(1) https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1176173289025&acceptedDisclaimer=true

"Reference Rate Reform (Topic 848)" – FASB Exposure Draft

- Hedge Accounting
  - Cash Flow Hedges – Qualitative Analysis

848-50-35-10

An entity may qualitatively assess existing cash flow hedges and new cash flow hedges on an ongoing basis in accordance with paragraphs 848-50-35-11 through 35-14 if the entity performs an initial test of hedge effectiveness using either of the following:

a. A method in accordance with Subtopics 815-20 and 815-30
b. An optional expedient method in accordance with paragraphs 848-50-25-6 through 25-14

848-50-35-11

The following criteria must be met so that an entity may continue to assert qualitatively that it may continue to apply hedge accounting for a hedging relationship under this Subtopic:

a. The hedged forecasted transaction or the hedging instrument references a rate that meets the scope of paragraph 848-10-15-3
b. There have been no changes to the terms of the hedging instrument other than those specified in paragraphs 848-20-15-2 through 15-3.
c. An entity shall consider the likelihood of the counterparty's compliance with the contractual terms of the hedging derivative that require the counterparty to make payments to the entity.

- While there are several quantitative expedients provided for cash flow hedge relationships, this clearly appears to be the simplest means to continue an existing cash flow hedge upon LIBOR transition.

(1) https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1176173289025&acceptedDisclaimer=true

“Reference Rate Reform (Topic 848)” – FASB Exposure Draft

- Hedge Accounting
  - Fair Value Hedges – Quantitative Analysis
    - Change the designated benchmark interest rate to new benchmark rate (I.e., SOFR)

848-40-25-4

If an entity elects the optional expedient in paragraphs 848-40-25-2 through 25-3 to change the designated benchmark interest rate, it shall, at a minimum, revise the rate used to discount the cash flows associated with the hedged item reflecting the change in the designated benchmark interest rate in accordance with paragraph 848-40-25-2. In addition, an entity may adjust either of the following:

a. The remaining designated cash flows
b. The revised rate used to discount the cash flows associated with the hedged item.

848-40-25-5

To apply the guidance in paragraphs 848-40-25-4, an entity may either:

a. Apply an approach that adjusts the hedged item's cumulative fair value hedge basis adjustment attributable to the changing from the originally designated benchmark interest rate to the replacement designated benchmark interest rate.
b. *Apply an approach that results in no adjustment to the hedged item's cumulative basis adjustment (that is, maintain the hedged item's cumulative basis adjustment immediately before the date of the change).*

- The key – if the hedged item was LIBOR discounted at LIBOR, it is now SOFR discounted at SOFR
  - Are these results different?

(1) https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1176173289025&acceptedDisclaimer=true

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