Height Research Report

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Housing Finance Reform

GSE Preferred Monetization Window is Opening, but Closes Fast

THE TAKEAWAY

Federal Housing Finance Agency (FHFA) Director Mel Watt's comment that FHFA will propose GSE risk-based capital (RBC) standards "in the very near future" is positive for GSE investors. We know Treasury Secretary Steven Mnuchin wants to restructure the GSEs because he views the current conservatorship status as unsustainable. An RBC framework would clearly quantify the amount of capital that Fannie Mae (FNMA) and Freddie Mac (FMCC) would need to be designated "well-capitalized" and able to exit conservatorship. We assess the potential capital needed to be designated "well-capitalized" and assess potential returns based on several scenarios, including a restructuring of the GSEs that includes Treasury exiting its almost $200 billion position in the GSEs (FNMA - $123.7 billion, FMCC - $72.6 billion).

Conclusion: We view the next 30 months as the most opportune time for Treasury and FHFA to initiate administrative actions that causes the GSEs to exit conservatorship. Elements that support this view are Mnuchin's comments regarding a fortress balance sheet and the unsustainable structure of the GSEs, the retention of $3 billion of capital in 4Q17, and Watt's comments on a proposed RBC structure for the entities.

Risk-based capital framework lacks details. Watt did not provide any significant details on how the RBC framework would be structured (i.e. risk weighting of assets, credit risk transfer benefits) or what levels of capital would be required. In addition, there was no mention of a capital conservation buffer, systemically important buffer, or a counter-cyclical capital buffer. He did note the GSEs are not banks and it is our understanding the framework will not mirror the Basel III capital regime.

We have several initial assessments of the GSE RBC framework. We expect the framework to incorporate a common equity tier 1 (CET1) ratio or similar ratio. We do not expect the ratios to be higher than Basel III minimums, although we expect the requirements to be higher than the prior core capital regime. We expect that credit risk transfers (CRTs) will provide capital relief to the GSEs , and our base case in this report is that the CRT capital benefit will offset any capital buffers above a stated minimum. We expect GSE mortgage portfolios will be assigned a 50% risk weighting and all other assets excluding cash and cash equivalents will have a risk weighting of 100%.

Using a 4.5% CET1 ratio, Fannie would need $76 billion to be designated well-capitalized and Freddie would need $47 billion as of 1Q18 (Figure 1). We ran the estimate using a 2% CET1 ratio, but we do not view this level as providing sufficient capital to protect taxpayers. At CET1 of 2%, Fannie would have to hold $34 billion of

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capital or just $12 billion more than the current capital regime that is suspended and Freddie would be required to hold $21 billion or just $6 billion more (Figure 2).

We estimate that Fannie will generate earnings of $13 billion in 2018 and 2019 (Figure 3). We expect its earnings to be fairly stable, which means it would take almost 6 years to accrete the capital needed to generate a CET1 ratio of 4.5%. We estimate that Freddie will generate almost $8 billion of earnings over the next two years, and it would also take just under 6 years to achieve a CET1 ratio of 4.5% (Figure 4).

Figure 1. GSE CET1 Estimated Capital Requirement

As of 1Q18 $ in billions	Fannie Mae Assets	Fannie Mae Risk Weight	Fannie Mae RWA	Freddie Mac Assets	Freddie Mac Risk Weight	Freddie Mac RWA
Cash	$ 49.9	0%	$ -	$ 47.0	0%	$ -
Restricted Cash	$ 27.1	0%	$ -	$ 3.4	0%	$ -
Fed Funds/Repos	$ -	0%	$ -	$ -	0%	$ -
Trading Securities	$ 40.1	100%	$ 40	$ 36.2	100%	$ 36
AFS	$ 3.9	100%	$ 4	$ 39.3	100%	$ 39
Mortgages HFS	$ 11.4	50%	$ 6	$ 27.6	50%	$ 14
FNMA Mortgages	$ -	50%	$ -	$ -	50%	$ -
Trusts	$ 3,205.2	50%	$ 1,603	$ 1,849.6	50%	$ 925
DTA	$ 16.5	100%	$ 17	$ 8.3	100%	$ 8
Accrued Interest	$ 8.1	100%	$ 8	$ 6.4	100%	$ 6
REO	$ 3.0	100%	$ 3	$ 0.8	100%	$ 1
Other	$ 17.9	100%	$ 18	$ 12.7	100%	$ 13
Total	$ 3,383.1		$ 1,698	$ 2,031.3		$ 1,042
Allowance	$ 18.7			$ 8.8		
Total, net	$ 3,364.4			$ 2,022.5		
Est. Capital Requirement	2.0%		**2.0%**	2.0%		**2.0%**
Est. Capital Needed	$ 67.7		**$ 34.0**	$ 40.6		**$ 20.8**
Est. Capital Requirement	3.3%		**3.3%**	3.3%		**3.3%**
Est. Capital Needed	$ 110.0		**$ 55.2**	$ 66.0		**$ 33.9**
Est. Capital Requirement	4.5%		**4.5%**	4.5%		**4.5%**
Est. Capital Needed	$ 152.2		**$ 76.4**	$ 91.4		**$ 46.9**

Source: SNL Financial, Height Capital Markets estimates.

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Figure 2. GSE Core Capital Requirement as 1Q18 - Currently Suspended

Old Core Capital Requirement	FNMA	FMCC
On Balance Sheet Assets	$ 178.0	$ 181.7
Required Capital %	2.50%	2.50%
Required Capital $	$ 4.4	$ 4.5
Off Balance Sheet Assets	$ 3,205	$ 1,850
Required Capital %	0.45%	0.45%
Required Capital $	$ 14.4	$ 8.3
Core Capital Requirement	$ 18.9	$ 12.9
15% Surplus	$ 2.8	$ 1.9
Est Capital Needed	**$ 21.7**	**$ 14.8**
Est Capital as a % of Assets	0.64%	0.73%
Est Capital as a % of RWAs	1.28%	1.42%

Source: FHFA, Height Capital Markets estimates.

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Figure 3. Fannie Mae Annual Earnings Model

Fannie Mae - FNMA Earnings Model ($000s)	Actual 2017	Estimated 2018	Estimated 2019
Income Statement			
Net Interest Income	20,733,000	21,050,638	21,442,478
MGMT and Guarantee Income	-	-	-
Partnership Income	-	-	-
Gain/(Loss) on Sale of Loans & Sec.	1,522,000	1,180,750	1,206,909
Other Noninterest Income	1,016,000	1,845,525	651,987
Total Revenue	23,271,000	24,076,913	23,301,374
Loan Loss Provisions	(2,012,000)	827,601	(199,072)
Total Revenue net of Provisions	25,283,000	23,249,312	23,500,445
Foreclosure & Repo	521,000	584,343	578,514
Compensation & Benefits	1,328,000	1,438,637	1,468,660
Professional Services	933,000	979,314	999,048
Occupancy & Equipment	144,000	-	-
Other Administration	476,000	507,793	518,025
Other Expense	3,442,000	2,806,920	3,155,429
Debt Extinguishment Losses, net	-	-	-
Total Noninterest Expense	6,844,000	6,317,007	6,719,676
Pretax Income (Loss)	18,439,000	16,932,305	16,780,769
Tax	15,984,000	3,439,061	3,356,154
Net Income (Loss)	2,455,000	13,493,244	13,424,615
Preferred Dividends	8,944,000	10,170,244	13,424,615
Net Income (Loss) to Common	(6,489,000)	3,323,000	-
Balance Sheet Highlights			
Loans	3,197,609,000	3,265,009,441	3,330,801,016
Allowance	19,084,000	18,937,055	18,652,486
Net Loans	3,178,525,000	3,246,072,386	3,312,148,530
Total Assets	3,345,529,000	3,413,823,504	3,479,717,196
Total Liabilities	3,349,215,000	3,413,968,467	3,479,862,159
Sr. Preferred Equity	123,681,700	123,681,700	123,681,700
Jr. Preferred Equity	19,130,000	19,130,000	19,130,000
Common Equity	(139,964,700)	(138,991,700)	(138,991,700)
Total Equity	2,847,000	3,820,000	3,820,000

Source: SNL Financial, Fannie Mae, Height Capital Markets estimates.

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Figure 4. Freddie Mac Annual Earnings Model

Freddie Mac - FMCC Earnings Model ($000s)	Actual 2017	Estimated 2018	Estimated 2019
Income Statement Highlights			
Net Interest Income	14,157,000	13,678,310	13,986,626
MGMT and Guarantee Income	662,000	749,292	763,820
Other Noninterest Income	6,207,000	2,011,275	510,539
Total Revenue	21,026,000	16,438,878	15,260,984
Loan Loss Provisions	(78,000)	1,975,430	1,777,552
Total Revenue net of Provisions	21,104,000	14,463,448	13,483,432
Foreclosure & Repo	189,000	158,072	153,842
Compensation & Benefits	1,098,000	1,148,297	1,159,823
Professional Services	452,000	421,398	451,433
Occupancy & Equipment	46,000	-	-
Other Administration	556,000	535,973	557,736
Other Expense	1,888,600	2,112,477	1,569,833
Losses on Loans Purchased	-	-	-
Total Noninterest Expense	4,229,600	4,376,217	3,892,667
Pretax Income (Loss)	16,874,400	10,087,231	9,590,765
Tax	11,209,000	2,094,779	2,006,110
Net Income (Loss)	5,665,400	7,992,453	7,584,656
Preferred Dividends	8,869,000	4,066,453	7,584,656
Net Income (Loss) to Common	(3,203,600)	3,926,000	-

Freddie Mac - FMCC Earnings Model ($000s)	Actual 2017	Estimated 2018	Estimated 2019
Balance Sheet Highlights			
Loans	1,880,183,000	1,921,931,063	1,932,540,152
Allowance	8,966,000	9,225,269	9,276,193
Net Loans	1,871,217,000	1,912,705,794	1,923,263,959
Total Assets	2,049,776,000	2,075,319,653	2,084,167,400
Total Liabilities	2,050,088,000	2,071,252,753	2,080,044,979
Sr. Preferred Equity	72,336,000	72,648,000	72,648,000
Jr. Preferred Equity	14,109,000	14,109,000	14,109,000
Common Equity	(86,756,500)	(86,606,500)	(86,606,500)
Total Equity	(312,000)	150,500	150,500

Source: SNL Financial, Freddie Mac, Height Capital Markets estimates.

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Capital requirements pave the way for exiting conservatorship. We view Watt's term as FHFA Director as steady and unremarkable, which is why his announcement of a proposed RBC framework piqued our interest. He could have produced these standards at any time over the past 4 years or not at all given that his term is ending in January 2019. While it is possible that the standards could be finalized before his term ends, that seems unlikely. This begs the question: why now?

We view proposed capital standards as another step forward in the process of releasing the GSEs from conservatorship. When the capital standards and ratios are finalized, the capital goal will be known and a plan to achieve these targets can be developed and initiated. It is our understanding that Mnuchin will work towards having President Trump nominate a FHFA Director that will work with Treasury to have the GSEs exit conservatorship. However, the GSE could remain in conservatorship or have their balance sheets and market shares reduced if potential candidates such as House Financial Services Committee Chair Jeb Hensarling (R-TX) or Chief Economist to the Vice President Mark Calabria are nominated.

Conversion is one option for Treasury to exit its GSE investment. Treasury owns Fannie and Freddie senior preferred shares totaling $123.7 billion and $72.6 billion, respectively. In addition, it has warrants for 4.6 billion shares of Fannie Mae common stock and 2.6 billion of Freddie Mac common stock, which represent a respective additional investment of $6.6 and $3.9 billion. We do not subscribe to the view that Treasury will forgive its investment in the GSEs because the senior preferred dividends from 1Q13 through 3Q17 were sufficient to pay Treasury the original 10% dividend (Figures 5 & 6). We state clearly that if our view is incorrect and Treasury does forgive its senior preferred share investment then there is tremendous value in both the junior preferred and common stock of both Fannie and Freddie. We expect most junior preferred shares will trade at or above par, depending on the dividend yield, and the common could increase fivefold or more. Alas, this is not our view.

Figure 5. Fannie Repaid Treasury in Full if Dividend was 10%

Fannie Mae Treasury Investment Paydown Model	Dividends Paid 1Q13 - 3Q17
Treasury Senior Preferred Shares - Beg	$ 117,148,700
Dividend Paid to Treasury	133,138,000
10% Dividend	14,349,241
Excess Payment	118,788,759
Adjusted Treasury Sr Preferred Shares	$ -

Source: SNL Financial, Fannie Mae, Height Capital Markets.

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Figure 6. Freddie Repaid Treasury in Full if Dividend was 10%

Freddie Mac Treasury Investment Paydown Model	Dividends Paid 1Q13-3Q17
Treasury Senior Preferred Shares - Beg	72,333,000
Dividend Paid to Treasury	85,212,000
10% Dividend	11,523,586
Excess Payment	73,688,414
Adjusted Treasury Sr Preferred Shares	-

Source: SNL Financial, Freddie Mac, Height Capital Markets.

Since we do not expect Treasury will forgive its investments in the GSEs, and given that its total investment in Fannie exceeds $130 billion including warrants and is almost $77 billion in Freddie with the warrants, we think the most viable path for Treasury to exit its GSE investment is to convert its investment into common stock. This will provide a liquid vehicle that can be sold into the market similar to the government's exit from American International Group (**AIG**) and Ally Financial (**ALLY**).

We estimate that Treasury will convert its shares at par, and junior preferred shares will be converted at 50% of par. We estimate that Treasury will own 90 billion of Fannie's common shares, including warrants, and 50 billion of Freddie's (Figure 7). Junior preferred shareholders would receive 6.6 billion shares of Fannie's common stock and 4.6 billion of Freddie's.

Next, we estimate that Fannie would have to issue 53 billion shares in a secondary offering to raise the $76 billion needed to be designated well-capitalized. All tolled, Fannie's common share count would increase from 5.7 billion shares to 151 billion. Freddie would need to issue 31 billion shares to raise $47 billion of capital, increasing its share count to 86 billion from 3.2 billion.

Both FNMA's Series S preferred shares (**FNMAS**) and FMCC's Series J preferred shares (**FMCKJ**) have a par value of $25. At 50% of par, FNMAS holders would receive 8.7 of Fannie's common shares for each preferred share and FMCKJ holders would receive 8.2 shares of Freddie common stock for each preferred share. If we value our estimated earnings for Fannie and Freddie at 8 times, we estimate there is 2-3% upside for FMNAS preferred shareholders and breakeven to a loss of 5% for FMCKJ preferred investors (Figure 8).

If we value the estimated earnings at 9 times, the returns for FNMAS investors improves to mid-teens and to 7-13% for FMCKJ holders.

In our view, the GSEs' earnings for 2018 and 2019 are likely to exceed our estimates as we model modest declines in reserves to loans. Neither company provides guidance on what the appropriate loss reserve should be, and reserves have been declining as a percent of loans for more than five years. In addition, both companies have reported significant trading and derivatives gains, which, if continued, would also cause reported earnings

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to exceed our estimates. These items could push the potential returns for FNMAS and FMCKJ holders to mid-teens in the 8 times estimated earnings scenario.

Figure 7. Estimated Fannie and Freddie Common Stock Outstanding Post-Conversion

Figures in M, except per share	Fannie Mae	Estimated Ownership	Freddie Mac	Estimated Ownership
Treasury Investment	$ 123,682		$ 72,648	
Current Share Price	$1.44		$1.52	
Estimated Shares Issued to Treasury	85,890		47,798	
Current Treasury Common Shares	4,604		2,584	
Total Treasury Shares	90,494	59.8%	50,382	58.2%
Common Shares Outstanding	1,158	0.8%	650	0.8%
Preferred Shares Outstanding	6,642	4.4%	4,641	5.4%
Est. Post Conversion Shares O/S	98,294	64.9%	55,673	64.3%
Estimated RBC Needed	$ 76,402		$ 46,903	
Shares Needed For Well Capitalized	53,057	35.1%	30,859	35.7%
Estimated Total Shares O/S	151,351		86,532	

Source: SNL Financial, Bloomberg, Height Capital Markets estimates.

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Figure 8. Estimated Returns on FNMAS and FMCKJ Post-Conversion and Capital Raise

Figures in M, except per share	2018	2019	2018	2019
2018 Earnings Estimate	$ 13,493	$ 13,425	$ 7,992	$ 7,585
FNMAS / FMCKJ Common Shares	8.7		8.2	
Valuation at 8x Est Earnings	$ 107,946	$ 107,397	$ 63,940	$ 60,677
Estimate Share Price	$ 0.71	$ 0.71	$ 0.74	$ 0.70
Est. FNMAS/FMCKJ Value as Common	$ 6.19	$ 6.16	$ 6.08	$ 5.77
Close 6/5/2018	$ 6.01		$ 6.05	
Upside	3%	2%	0%	-5%
Valuation at 9x Est Earnings	$ 121,439	$ 120,822	$ 71,932	$ 68,262
Estimate Share Price	$ 0.80	$ 0.80	$ 0.83	$ 0.79
Est. FNMAS/FMCKJ Value as Common	$ 6.97	$ 6.93	$ 6.84	$ 6.49
Upside	16%	15%	13%	7%

Source: SNL Financial, Bloomberg, Height Capital Markets estimates.

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Potential Return Analysis: We estimated potential returns for GSE junior prefered shares (j-prefs) using a range of haircuts. The first and simplest analysis compared the current share price of FNMAS and FMCKJ to the range of values assuming par haircuts of 10-70%. These series are the most liquid j-prefs for both companies. This analysis shows potential returns at a 50% haircut are 100% or more for the j-prefs and range from 20%+ at a 70% haircut to over 200% for a 10% haircut (Figures 9 & 10).

Figure 9. Potential Returns to Current Share Price for FNMAS J-Prefs

FNMAS								
Price 6/5/18	$ 6.01							
Par	$25.00							
% of Par	24%							
Est. Haircut		10%	20%	30%	40%	**50%**	60%	70%
Est. Value		$22.50	$20.00	$17.50	$15.00	**$12.50**	$10.00	$7.50
Est. Upside		274%	233%	191%	150%	**108%**	66%	25%

Source: Bloomberg, Height Capital Markets.

Figure 10. Potential Returns to Current Share Price for FMCKJ-Prefs

FMCKJ								
Price 6/5/18	$ 6.05							
Par	$25.00							
% of Par	24%							
Est. Haircut		10%	20%	30%	40%	**50%**	60%	70%
Est. Value		$22.50	$20.00	$17.50	$15.00	**$12.50**	$10.00	$7.50
Est. Upside		272%	231%	189%	148%	**107%**	65%	24%

Source: Bloomberg, Height Capital Markets.

We conducted an analysis to determine if j-prefs holders that purchased either Fannie or Freddie shares in 2009 or 2013 could incur material haircuts and still achieve a 20% annual return. The answer is unequivocally affirmative (Figures 11 & 12).

The average FNMAS price in 2009 was $1.16 (Figure 11). The future value of a 20% return over 10 years is $7.18. At a 50% haircut, the value of the j-prefs is $12.50 and this yields a return that is 74% above a 20% annual return target. The target price for FMCKJs is $6.50 (Figure 12). For FMCKJs, the return is 92% above the targeted rate. Investors that purchased Fannie and Freddie j-prefs around the average price in 2009 can also achieve total annual returns in excess of 25% at a 50% haircut.

In 2013, the average price for FNMAS was $5.20 and $5.03 for FMCKJ (Figures 11 & 12). The future value using a 20% return target and a six-year holding period is $15.53 for FNMAS and $15.02 for FMCKJ. Our analysis indicates that j-pref holders can achieve a 20% annual return at a 40% haircut for FMCKJs and are just shy of a 20% return for FNMAS. If the haircut was 50%, we calculate the return to be slightly over 16% for FMCKJs and slightly under 16% for FNMAS.

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Figure 11. Achieving Targeted Returns with Haircuts - FNMAS J-Prefs

Fannie Mae - FNMAS Preferred Shares					
		2009		2013	
Holding Period (Yrs)		10	10	6	6
Average Price		$ 1.16	$ 1.16	$ 5.20	$ 5.20
Return Target		20%	25%	20%	25%
Future Value		**$ 7.18**	**$ 10.80**	**$ 15.53**	**$ 19.84**
Par	**$ 25.00**				
Haircut	**Adj. Value**	**Excess/(Shortfall) to Return Target**			
10%	$ 22.50	213%	108%	45%	13%
20%	$ 20.00	178%	85%	29%	1%
30%	$ 17.50	144%	62%	13%	-12%
40%	$ 15.00	109%	39%	-3%	-24%
50%	$ 12.50	74%	16%	-19%	-37%
60%	$ 10.00	39%	-7%	-36%	-50%

Source: Bloomberg, Height Capital Markets.

Figure 12. Achieving Targeted Returns with Haircuts - FNMAS J-Prefs

Freddie Mac - FMCKJ Preferred Shares					
		2009		2013	
Holding Period (Yrs)		10	10	6	6
Average Price		$ 1.05	$ 1.05	$ 5.03	$ 5.03
Return Target		20%	25%	20%	25%
Future Value		**$ 6.50**	**$ 9.78**	**$ 15.02**	**$ 19.19**
Par	**$ 25.00**				
Haircut	**Adj. Value**	**Excess/(Shortfall) to Return Target**			
10%	$ 22.50	246%	130%	50%	17%
20%	$ 20.00	208%	105%	33%	4%
30%	$ 17.50	169%	79%	17%	-9%
40%	$ 15.00	131%	53%	0%	-22%
50%	$ 12.50	92%	28%	-17%	-35%
60%	$ 10.00	54%	2%	-33%	-48%

Source: Bloomberg, Height Capital Markets.

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Figure 13. FNMA Preferred Share Price 2009 Ticker - FNMAS

Source: Bloomberg.

Figure 14. FNMA Preferred Share Price 2013 Ticker - FNMAS

Source: Bloomberg.

Figure 15. FMCC Preferred Share Price 2009 - Ticker FMCKJ

Source: Bloomberg.

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Figure 16. FMCC Preferred Share Price 2013 - Ticker FMCKJ

Source: Bloomberg.

Returns appear rich even with steep haircuts. Our 50% haircut to par also shows significant potential returns when we convert the shares at 80% and 65% of Fannie's and Freddie's common share closing price as of June 5 (Figure 17).

We estimate that the potential returns for Fannie j-prefs range from 35-126% with an average return of 100%, if the common shares trade 20% below the June 5 closing price. If the common shares drop by 35%, we estimate the returns to be 10-84% with and average return of 63%.

For Freddie Mac j-prefs, we estimate the returns to be 59-135% with an average return of 118% if the common trades down 20%. If the common declines by 35%, we estimate the potential returns to be 29-91% with an average return of 77%,

Figure 17. GSE Share Price Used to Determine Post Conversion J-Pref Value

6/5/2018	Close	80%	65%
FNMA	$ 1.44	$ 1.15	$ 0.94
FMCC	$ 1.52	$ 1.22	$ 0.99

Source: SNL Financial, Height Capital Markets.

Appendix 1. Estimated Post-Conversion Returns for Fannie Mae J-Pref Returns

FNMA Pref Ticker	6/5/2018 Price	Par	Preferred Shares Outstanding	# of Common Shares for Pref 50%	New Common Share Count	Preferred Market Value	Est. Value of Converted Pref at 80% of Close	Estimated Return	Est. Value of Converted Pref at 65% of Close	Estimated Return
FNMFM	$ 9.13	$ 50.00	3,000,000	17.4	52,083,333	27,390,000	$ 60,000,000	119%	$ 48,750,000	78%
FNMAM	$ 9.25	$ 50.00	8,000,000	17.4	138,888,889	74,000,000	$ 160,000,000	116%	$ 130,000,000	76%
FNMAG	$ 9.00	$ 50.00	6,000,000	17.4	104,166,667	54,000,000	$ 120,000,000	122%	$ 97,500,000	81%
FNMAN	$ 8.85	$ 50.00	6,900,000	17.4	119,791,667	61,065,000	$ 138,000,000	126%	$ 112,125,000	84%
FNMAL	$ 8.90	$ 50.00	9,200,000	17.4	159,722,222	81,880,000	$ 184,000,000	125%	$ 149,500,000	83%
FNMAK	$ 9.00	$ 50.00	4,500,000	17.4	78,125,000	40,500,000	$ 90,000,000	122%	$ 73,125,000	81%
FNMAI	$ 5.00	$ 25.00	15,000,000	8.7	130,208,333	75,000,000	$ 150,000,000	100%	$ 121,875,000	63%
FNMAJ	$ 5.17	$ 25.00	21,200,000	8.7	184,027,778	109,604,000	$ 212,000,000	93%	$ 172,250,000	57%
FNMAT	$ 6.12	$ 25.00	89,000,000	8.7	772,569,444	544,680,000	$ 890,000,000	63%	$ 723,125,000	33%
FNMFO	$ 25,000.00	$ 100,000.00	24,922	34,722.2	865,347,222	623,050,000	$ 996,880,000	60%	$ 809,965,000	30%
FDDXD	$ 14.79	$ 50.00	3,000,000	17.4	52,083,333	44,370,000	$ 60,000,000	35%	$ 48,750,000	10%
FNMAP	$ 9.09	$ 50.00	13,800,000	17.4	239,583,333	125,442,000	$ 276,000,000	120%	$ 224,250,000	79%
FNMAO	$ 9.35	$ 50.00	5,750,000	17.4	99,826,389	53,762,500	$ 115,000,000	114%	$ 93,437,500	74%
FNMFN	$ 9.70	$ 50.00	50,000,000	17.4	868,055,556	485,000,000	$ 1,000,000,000	106%	$ 812,500,000	68%
FNMAH	$ 4.70	$ 25.00	40,000,000	8.7	347,222,222	188,000,000	$ 400,000,000	113%	$ 325,000,000	73%
FNMAS	$ 6.01	$ 25.00	280,000,000	8.7	2,430,555,556	1,682,800,000	$ 2,800,000,000	66%	$ 2,275,000,000	35%
					6,642,256,944	**4,270,543,500**	**$ 7,651,880,000**	**79%**	**$ 6,217,152,500**	**46%**

Source: SNL Financial, Height Capital Markets.

Appendix 2. Estimated Post-Conversion Returns for Freddie Mac J-Pref Returns

FMCC Pref Ticker	6/5/2018 Price	Par	Preferred Shares Outstanding	# of Common Shares for Pref 50%	New Common Share Count	Preferred Market Value	Est. Value of Converted Pref at 80% of Close	Estimated Return	Est. Value of Converted Pref at 65% of Close	Estimated Return
FREGP	$ 8.50	$ 50.00	3,000,000	16.4	49,345,352	25,500,000	$ 60,000,000	135%	$ 48,750,000	91%
FMCKK	$ 12.55	$ 50.00	8,000,000	16.4	131,587,604	100,400,000	$ 160,000,000	59%	$ 130,000,000	29%
FMCCH	$ 8.60	$ 50.00	8,000,000	16.4	131,587,604	68,800,000	$ 160,000,000	133%	$ 130,000,000	89%
FREJP	$ 8.50	$ 50.00	4,000,000	16.4	65,793,802	34,000,000	$ 80,000,000	135%	$ 65,000,000	91%
FREJO	$ 10.00	$ 50.00	3,000,000	16.4	49,345,352	30,000,000	$ 60,000,000	100%	$ 48,750,000	63%
FMCCK	$ 9.00	$ 50.00	5,000,000	16.4	82,242,253	45,000,000	$ 100,000,000	122%	$ 81,250,000	81%
FMCCO	$ 9.00	$ 50.00	3,450,000	16.4	56,747,154	31,050,000	$ 69,000,000	122%	$ 56,062,500	81%
FMCCP	$ 9.40	$ 50.00	3,450,000	16.4	56,747,154	32,430,000	$ 69,000,000	113%	$ 56,062,500	73%
FMCKP	$ 8.75	$ 50.00	6,000,000	16.4	98,690,703	52,500,000	$ 120,000,000	129%	$ 97,500,000	86%
FREJN	$ 8.50	$ 50.00	6,000,000	16.4	98,690,703	51,000,000	$ 120,000,000	135%	$ 97,500,000	91%
FMCCT	$ 9.06	$ 50.00	5,000,000	16.4	82,242,253	45,300,000	$ 100,000,000	121%	$ 81,250,000	79%
FMCKO	$ 4.80	$ 25.00	20,000,000	8.2	164,484,506	96,000,000	$ 200,000,000	108%	$ 162,500,000	69%
FMCKM	$ 4.70	$ 25.00	44,000,000	8.2	361,865,912	206,800,000	$ 440,000,000	113%	$ 357,500,000	73%
FMCKN	$ 4.70	$ 25.00	20,000,000	8.2	164,484,506	94,000,000	$ 200,000,000	113%	$ 162,500,000	73%
FMCKL	$ 4.90	$ 25.00	20,000,000	8.2	164,484,506	98,000,000	$ 200,000,000	104%	$ 162,500,000	66%
FMCKI	$ 4.80	$ 25.00	20,000,000	8.2	164,484,506	96,000,000	$ 200,000,000	108%	$ 162,500,000	69%
FMCCI	$ 8.70	$ 50.00	5,000,000	16.4	82,242,253	43,500,000	$ 100,000,000	130%	$ 81,250,000	87%
FMCCG	$ 8.70	$ 50.00	4,395,000	16.4	72,290,940	38,236,500	$ 87,900,000	130%	$ 71,418,750	87%
FMCCL	$ 8.60	$ 50.00	5,750,000	16.4	94,578,591	49,450,000	$ 115,000,000	133%	$ 93,437,500	89%
FMCCM	$ 8.70	$ 50.00	6,500,000	16.4	106,914,929	56,550,000	$ 130,000,000	130%	$ 105,625,000	87%
FMCCN	$ 8.72	$ 50.00	4,600,000	16.4	75,662,873	40,112,000	$ 92,000,000	129%	$ 74,750,000	86%
FMCCJ	$ 8.60	$ 50.00	4,025,000	16.4	66,205,013	34,615,000	$ 80,500,000	133%	$ 65,406,250	89%
FMCCS	$ 8.80	$ 50.00	15,000,000	16.4	246,726,758	132,000,000	$ 300,000,000	127%	$ 243,750,000	85%
FMCKJ	$ 6.05	$ 25.00	240,000,000	8.2	1,973,814,067	1,452,000,000	$ 2,400,000,000	65%	$ 1,950,000,000	34%
					4,641,259,293	**2,953,243,500**	**$ 5,643,400,000**	**91%**	**$ 4,585,262,500**	**55%**

Source: SNL Financial, Height Capital Markets.

Height Research Report

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COMPANIES MENTIONED IN THIS REPORT

Freddie Mac (FMCC), Fannie Mae (FNMA), American International Group Inc (AIG), Ally Financial Inc (ALLY)

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