

FNCE 529Q: Fixed Income

Spring 2018, Term 1

This take-home final exam project must be the original work of the student whose name appears on the submission. No assistance other than that detailed in the instructions and code written in previous group assignments may be given, received, or used during the take-home exam period. Neither the instructor nor the TA will provide help beyond the instructions. You may not communicate with any other individual, including but not limited to your group members, regarding the exam project until after the due-date and time.

Due 3/3/2018 (midnight)

Congratulations, today is your first day on the new job, working in the M&A group at prestigious ex-investment bank Gold-in-Sacks. Your boss informs you that, while deal flow is slow, he would like you to help clean up the group's balance sheet. Over the years, the group opportunistically bought fixed income securities from the companies it advised in M&A deals.

One of the more exotic securities on the books is FNMA MBS pool #AS8610. Your boss says: "We know nothing about this security but with interest rates on the rise let's try to value it and see if we can sell it for a fair price."

Asking your colleagues in capital markets, who undoubtedly know more about MBSs, is out of the question for internal reputation reasons. After all, your boss probably should not have bought things he knew nothing about in the first place. You will have to start from scratch.

1. Your first task should be to describe the security. What type of security is it? Who issued it and when? What is the underlying collateral? When was it originated? Who are the borrowers? The more detail you provide in your proposal, the more credible it is.

FN AS8610	99-23 ¹ / ₄	99-23 ³ / ₄ /99-24 ³ / ₄	Yield	3.037/3.028	Coupon	3.000%	BVAL					
As of 26 Feb	Fannie Mae Pool		Prepay	171PSA								
FN AS8610 Mtge	Export		Page 1/2	Security Description								
FNCI 3 N	3.404(164)14	CUSIP	3138WJR83	Pool Level	99 Buy	96 Sell						
<div>Summary</div> <div>Comments</div>												
Pool	FN AS8610		Seasoning	FNCI 3 N	As Of	02/2018						
Type	(CI) Conventional Conv	15 years Level pay	Vintage	FNCI 3 2016	Issue Date	12/01/2016						
Traits	30/360				Maturity Date	01/01/2032						
Seller	Multiple Pool											
Pool Information					Balance							
Coupon	3.000	WAC	3.404	Orig WAC	3.408	Factor	0.85778700					
		WARM	164	Orig WAM	179	Orig Amt	337,903,338					
		WALA	14			Curr Amt	289,849,091					
Collateral Information					Prepay CPR PSA							
WAOLTV	67	AOLS	250,609	Orig TPO	33.72	1 Month	9.2 327					
WAOLTV-HPI	64	WAOLS*	289,104	Curr TPO	33.04	3 Month	9.1 349					
WAOLTV*	67	MAXLS	800,000			6 Month	8.4 365					
WAOCs	745	WAOLT	180			1 Year	8.1 476					
						Life	7.4 494					
# Loans	1,255	Delay	54 (24)			States	%UPB					
TRACE Eligible					California 28.6							
Paydown Information					Texas 9.5							
					Colorado 5.3							
					*Value calculated by Bloomberg							
Prepay History	Feb18	Jan	Dec	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar17
1 Month CPR	9.2	10.5	7.5	10.5	4.0	8.7	9.5	16.5	8.2	2.8	5.5	3.5
3 Month CPR	9.1	9.5	7.3	7.7	7.4	11.6	11.5	9.4	5.6	4.0	4.0	3.3
6 Month CPR	8.4	8.5	9.5	9.6	8.4	8.6	7.8	6.7	4.4			
12 Month CPR	8.1	7.6	7.0									
Life CPR	7.4	7.3	7.0	7.0	6.6	6.9	6.7	6.3	4.4	3.7	3.9	3.3
Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2018 Bloomberg Finance L.P. SN 113065 G597-4452-0 27-Feb-18 13:12:16 EST GMT-5:00												

2

FN AS8610	99-23 ³ _A	99-23 ¹ _B /99-24 ³ _B	Yield 3.037/3.028	Coupon 3.000%	BVAL
As of 26 Feb	Fannie Mae Pool		Prepay 171PSA		
FN AS8610 Mtge	Video Tutorial		Collateral Composition		
FNCI 3 N	3.404(164)14	CUSIP 3138WJR83	Blended		
Composition	Quartiles	Show All	13 Clear	As of 02/2018	
1) Overview					
2) Addl Info 1					
3) Modification					
4) Custom					
5) Quartiles					
Distribution					
6) Origination Year					
7) Geographics					
8) Servicers					
9) Sellers					
10) Coupon					
11) Issuance LTV					
12) Amortized LTV					
13) Combined LTV					
14) Original LTV					
15) Credit Score					
16) Debt to Income					
17) Orig Loan Size					
18) Age					
19) Remaining Term					
20) Original Term					
21) Next Step Date					
22) Last Step Date					
23) Terminal Coupon					

	Min	25%	Median	75%	Max	Wavg
Coupon (%)	3.250	3.250	3.375	3.500	4.125	3.404
Net Coupon (%)	3.000	3.000	3.000	3.000	3.000	3.000
Remaining Term	19	165	165	166	167	164
Age	13	14	14	15	15	14
Original Term	120	180	180	180	180	180
Orig Loan Size (USD)	150,320	176,250	220,500	296,000	800,000	289,104
Issuance LTV	15	59	72	80	94	67
Combined LTV	15	60	72	80	112	67
Credit Score	N/A	N/A	N/A	N/A	N/A	745
HPI LTV	N/A	N/A	N/A	N/A	N/A	N/A

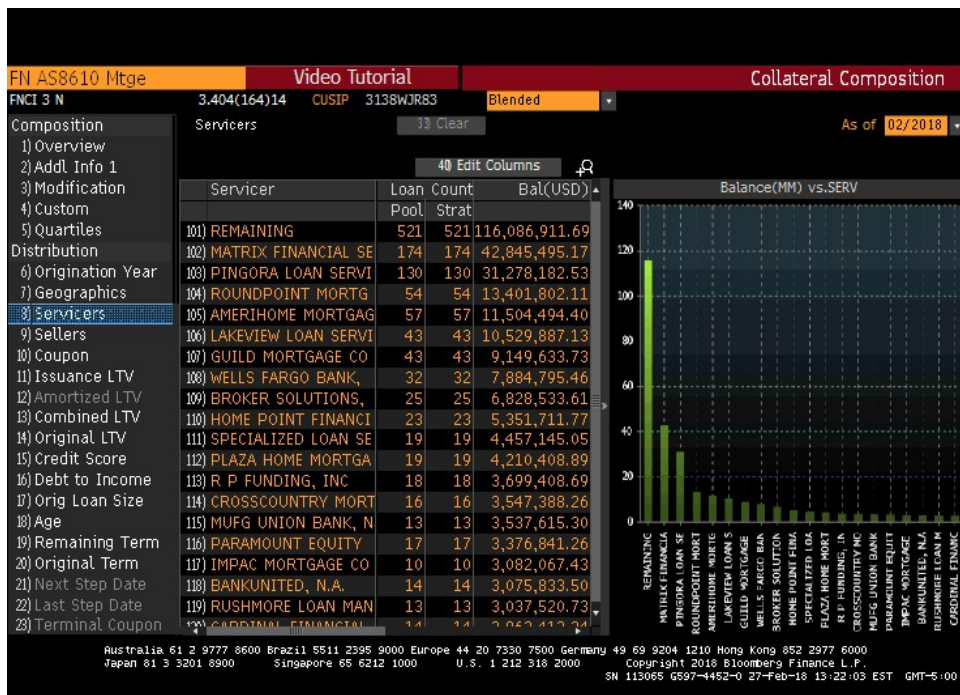
Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 6900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2018 Bloomberg Finance L.P.
SN 113065 6597-4452-0 27-Feb-18 13:20:16 EST GMT-5:00

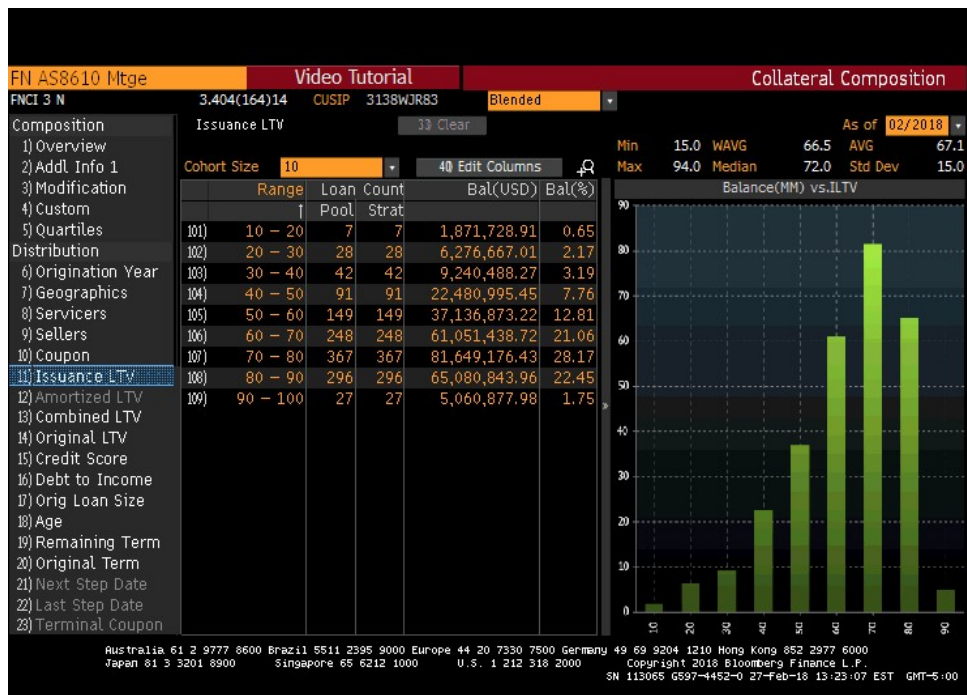
[Note, the difference between the coupon and net coupon is servicing.]

FN AS8610	99-23 ³ _A	99-23 ¹ _B /99-24 ³ _B	Yield 3.037/3.028	Coupon 3.000%	BVAL
As of 26 Feb	Fannie Mae Pool		Prepay 171PSA		
FN AS8610 Mtge	Video Tutorial		Collateral Composition		
FNCI 3 N	3.404(164)14	CUSIP 3138WJR83	Blended		
Composition	Geographics	13 Clear	As of 02/2018		
1) Overview					
2) Addl Info 1					
3) Modification					
4) Custom					
5) Quartiles					
Distribution					
6) Origination Year					
7) Geographics					
8) Servicers					
9) Sellers					
10) Coupon					
11) Issuance LTV					
12) Amortized LTV					
13) Combined LTV					
14) Original LTV					
15) Credit Score					
16) Debt to Income					
17) Orig Loan Size					
18) Age					
19) Remaining Term					
20) Original Term					
21) Next Step Date					
22) Last Step Date					
23) Terminal Coupon					

Geo	Loan Count	Bal(USD)	Bal(%)
Pool	Strat		
101) CA	300	82,786,866.71	28.56
102) TX	130	27,540,598.54	9.50
103) CO	63	15,432,739.12	5.32
104) WA	59	14,233,845.66	4.91
105) FL	61	12,968,119.67	4.47
106) AZ	61	12,210,130.88	4.21
107) IL	57	11,685,823.24	4.03
108) OR	40	9,148,723.02	3.16
109) MN	36	8,048,822.16	2.78
110) MI	40	7,918,391.58	2.73
111) GA	32	7,205,693.71	2.49
112) NJ	28	7,158,287.59	2.47
113) UT	34	6,496,059.57	2.24
114) MA	22	6,446,152.98	2.22
115) PA	28	5,926,722.28	2.04
116) NC	25	5,063,811.28	1.75
117) MD	20	4,375,139.78	1.51
118) VA	18	3,951,552.50	1.36
119) NV	18	3,916,141.23	1.35
120) OH	19	3,803,187.79	1.31

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 6900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2018 Bloomberg Finance L.P.
SN 113065 6597-4452-0 27-Feb-18 13:20:55 EST GMT-5:00





2. Next describe the security's cashflows to date. For this, you collect the following data:

FN AS8610	99-23 ³ / ₄	99-23 ¹ / ₈ /99-24 ³ / ₈	Yield 3.037/3.028	Coupon 3.000%	BVAL
As of 26 Feb	Fannie Mae Pool		Prepay 171PSA		
FN AS8610 Mtge	Export			Paydown Information	
FNCI 3 N	3.404(164)14	CUSIP 3138WJR83	PoolLevel		
Summary	Paydown	Collateral	Performance		
Curr Collat	289,849,090.59	Net Cpn	3	WALA	14
Orig Collat	337,903,338.00	WAC	3.4040	WAM	164
Pool Factor	0.857787000			# of Loans	1255
	CPR				
Date	1M	3M	6M	12M	Life
02/2018	9.16	9.06	8.40	8.10	7.42
01/2018	10.52	9.50	8.47	7.60	7.29
12/2017	7.49	7.34	9.51	7.01	7.01
11/2017	10.47	7.74	9.63		6.97
10/2017	3.96	7.42	8.39		6.61
09/2017	8.67	11.63	8.64		6.90
08/2017	9.53	11.48	7.80		6.68
07/2017	16.47	9.36	6.73		6.26
06/2017	8.23	5.56	4.44		4.44
05/2017	2.84	3.97			3.67
04/2017	5.52	4.02			3.87
03/2017	3.53	3.32			3.32
02/2017	3.01				3.21
01/2017	3.42				3.42
12/2016					
	PSA				
Date	1M	3M	6M	12M	Life
02/2018	327	349	365	476	494
01/2018	405	396	403	506	519
12/2017	312	334	500	538	538
11/2017	476	387	566		580
10/2017	198	412	559		600
09/2017	482	727	664		689
08/2017	596	820	709		741
07/2017	1,176	780	747		782
06/2017	686	555	634		634
05/2017	284	496			611
04/2017	690	670			774
03/2017	588	829			829
02/2017	752				1,070
01/2017	1,708				1,708
12/2016					

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2018 Bloomberg Finance L.P.
SN 113065 G597-4452-0 27-Feb-18 13:31:28 EST GMT-5:00

FN AS8610	99-23 ³ / ₄	99-23 ¹ / ₈ /99-24 ³ / ₈	Yield 3.037/3.028	Coupon 3.000%	BVAL
As of 26 Feb	Fannie Mae Pool		Prepay 171PSA		
FN AS8610 Mtge	Export			Paydown Information	
FNCI 3 N	3.404(164)14	CUSIP 3138WJR83	PoolLevel		
Summary	Paydown	Collateral	Performance		
Curr Collat	289,849,090.59	Net Cpn	3	WALA	14
Orig Collat	337,903,338.00	WAC	3.4040	WAM	164
Pool Factor	0.857787000			# of Loans	1255
	Collateral				
Date	Factor	# Loans	WAC	WAM	WALA
02/2018	0.857787000	1,255	3.404	164	14
01/2018	0.868815410	1,264	3.404	165	13
12/2017	0.881061190	1,270	3.404	166	12
11/2017	0.890973500	1,277	3.404	167	11
10/2017	0.903426340	1,287	3.404	168	10
09/2017	0.910679900	1,290	3.405	169	9
08/2017	0.921816610	1,298	3.406	170	8
07/2017	0.933789990	1,308	3.408	171	7
06/2017	0.952168010	1,324	3.407	173	6
05/2017	0.963296670	1,331	3.408	174	5
04/2017	0.969899900	1,333	3.407	175	4
03/2017	0.978792430	1,338	3.407	176	3
02/2017	0.986021630	1,340	3.408	177	2
01/2017	0.992826620	1,341	3.408	178	1
12/2016	1.000000000	1,341	3.408	179	0
	Principal				
Date	Factor	# Loans	WAC	WAM	WALA
02/2018	0.857787000	1,255	3.404	164	14
01/2018	0.868815410	1,264	3.404	165	13
12/2017	0.881061190	1,270	3.404	166	12
11/2017	0.890973500	1,277	3.404	167	11
10/2017	0.903426340	1,287	3.404	168	10
09/2017	0.910679900	1,290	3.405	169	9
08/2017	0.921816610	1,298	3.406	170	8
07/2017	0.933789990	1,308	3.408	171	7
06/2017	0.952168010	1,324	3.407	173	6
05/2017	0.963296670	1,331	3.408	174	5
04/2017	0.969899900	1,333	3.407	175	4
03/2017	0.978792430	1,338	3.407	176	3
02/2017	0.986021630	1,340	3.408	177	2
01/2017	0.992826620	1,341	3.408	178	1
12/2016	1.000000000	1,341	3.408	179	0

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2018 Bloomberg Finance L.P.
SN 113065 G597-4452-0 27-Feb-18 13:31:46 EST GMT-5:00

FN AS8610	99-23 ³ ₄	99-23 ¹ ₈ /99-24 ³ ₈	Yield 3.037/3.028	Coupon 3.000%	BVAL		
As of 26 Feb	Fannie Mae Pool		Prepay 171PSA				
FN AS8610 Mtge	Export				Paydown Information		
FNCI 3 N	3.404(164)14	CUSIP 3138WJR83	PoolLevel	-			
Summary	Paydown	Collateral	Performance				
	Coupon 3	WALA 14	Issue 12/01/2016				
	WAC 3.4040	WAM 164	Maturity 01/01/2032				
	Orig Bal 337,903,338	Day Count 30/360	Pay Delay 54 (24) days				
	Date	Factor	Coupon	Principal	Interest	Balance	Cashflow
Total				48,054,247	11,111,587		
03/26/2018			3.00000				
11) 02/26/2018	0.857787000	3.00000	3,726,536.55	733,939.07	289,849,090.59	4,460,475.62	
12) 01/25/2018	0.868815410	3.00000	4,137,889.94	744,283.79	293,575,627.14	4,882,173.73	
13) 12/26/2017	0.881061190	3.00000	3,349,402.64	752,657.30	297,713,517.08	4,102,059.94	
14) 11/27/2017	0.890973500	3.00000	4,207,856.20	763,176.94	301,062,919.72	4,971,033.14	
15) 10/25/2017	0.903426340	3.00000	2,451,002.14	769,304.45	305,270,775.92	3,220,306.58	
16) 09/25/2017	0.910679900	3.00000	3,763,131.48	778,712.27	307,721,778.06	4,541,843.76	
17) 08/25/2017	0.921816610	3.00000	4,045,845.07	788,826.89	311,484,909.54	4,834,671.96	
18) 07/25/2017	0.933789990	3.00000	6,209,994.30	804,351.87	315,530,754.61	7,014,346.18	
19) 06/26/2017	0.952168010	3.00000	3,760,411.36	813,752.90	321,740,748.92	4,574,164.26	
20) 05/25/2017	0.963296670	3.00000	2,231,253.46	819,331.03	325,501,160.28	3,050,584.49	
21) 04/25/2017	0.969899900	3.00000	3,004,815.57	826,843.07	327,732,413.74	3,831,658.64	
22) 03/27/2017	0.978792430	3.00000	2,442,770.81	832,950.00	330,737,229.31	3,275,720.81	
23) 02/27/2017	0.986021630	3.00000	2,299,428.84	838,698.57	333,180,000.12	3,138,127.41	
24) 01/25/2017	0.992826620	3.00000	2,423,909.05	844,758.34	335,479,428.95	3,268,667.39	
25) 12/01/2016	1.000000000				337,903,338.00		
Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000 Japan 81 3 3201 6900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2018 Bloomberg Finance L.P. SN 113065 6597-4452-0 27-Feb-18 15:32:15 EST GMT-5:00							

To make sure there is nothing unique about this pool of loans, you also collect data on the “generic” FNMA 3% pool which represents the universe of all 5,852 pools with a 3% coupon created by FNMA over the years. Compare your pool to its generic counterpart.

FNCL 3 N	↓ 96-20	- 19	96-19/96-20	Prev 97-07	BGN
At 13:38	Op 96-27	Hi 97-00	Lo 96-15	Yield 3.440/3.435	
FNCL 3 N Mtge	Export				Paydown Information
US GENERIC	3.664(339)18	CUSIP None			
Summary	Paydown	Collateral	Performance		
Curr Collat (M)	237,720,393	Net Cpn 3.0000	WALA 18		
Orig Collat (M)	264,429,570	WAC 3.6640	WAM 339		
Pool Factor	0.898993230	# of Pools 5852			
	CPR				
	1M	3M	6M	12M	Life
02/2018	5.25	5.74	6.09	5.37	
01/2018	6.01	6.25	6.19	5.19	
12/2017	6.00	6.32	6.26	5.11	
11/2017	6.82	6.55	6.19	5.18	
10/2017	6.31	6.30	5.80	5.24	
09/2017	6.82	6.50	5.61	5.63	
08/2017	6.28	6.25	5.12	6.32	
07/2017	6.85	5.70	4.72	6.60	
06/2017	5.78	4.97	4.53	6.78	
05/2017	4.54	4.09	4.89	6.99	
04/2017	4.63	3.79	5.56	7.23	
03/2017	3.10	4.13	6.49	7.73	
02/2017	3.63	5.69	8.11	7.83	
01/2017	5.64	7.30	8.83	7.81	
12/2016	7.76	8.79	9.15	7.69	
11/2016	8.48	10.46	9.06	7.39	
10/2016	10.13	10.33	9.00	7.03	
	VPR				
	1M	3M	6M	12M	Life
02/2018	5.25	5.74	6.09	5.37	
01/2018	6.01	6.25	6.19	5.19	
12/2017	6.00	6.32	6.26	5.11	
11/2017	6.82	6.55	6.19	5.18	
10/2017	6.31	6.30	5.80	5.24	
09/2017	6.82	6.50	5.61	5.63	
08/2017	6.28	6.25	5.12	6.32	
07/2017	6.85	5.70	4.72	6.60	
06/2017	5.78	4.97	4.53	6.78	
05/2017	4.54	4.09	4.89	6.99	
04/2017	4.63	3.79	5.56	7.23	
03/2017	3.10	4.13	6.49	7.73	
02/2017	3.63	5.69	8.11	7.83	
01/2017	5.64	7.30	8.83	7.81	
12/2016	7.76	8.79	9.15	7.69	
11/2016	8.48	10.46	9.06	7.39	
10/2016	10.13	10.33	9.00	7.03	
	Buyout CPR				
	1M	3M	6M	12M	Life
02/2018	150	173	200	21	
01/2018	180	199	216	22	
12/2017	188	210	229	23	
11/2017	221	226	238	25	
10/2017	214	228	235	27	
09/2017	237	242	234	29	
08/2017	222	238	220	33	
07/2017	257	231	217	36	
06/2017	232	216	224	38	
05/2017	196	192	259	40	
04/2017	217	195	318	42	
03/2017	160	233	395	46	
02/2017	207	346	513	46	
01/2017	348	470	566	46	
12/2016	497	581	583	45	
11/2016	573	690	568	43	
10/2016	635	660	530	41	
Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000 Japan 81 3 3201 6900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2018 Bloomberg Finance L.P. SN 113065 6597-4452-0 27-Feb-18 13:40:30 EST GMT-5:00					

FN AS8610	99-23 ³ _B	99-23 ¹ _B /99-24 ³ _B	Yield 3.037/3.028	Coupon 3.000%	BVAL				
As of 26 Feb	Fannie Mae Pool		Prepay 171PSA						
FN AS8610 Mtge	Export			Paydown Information					
FNCI 3 N	3.404(164)14	CUSIP 3138WJR83	PoolLevel						
Summary	Paydown	Collateral	Performance						
Curr Collat	289,849,090.59	Net Cpn	3	WALA	14				
Orig Collat	337,903,338.00	WAC	3.4040	WAM	164				
Pool Factor	0.857787000		# of Loans	1255					
		Collateral		Principal					
Date	Factor	# Loans	WAC	WAM	WALA	Balance	Total	Sched	Unsched
02/2018	0.857787000	1,255	3.404	164	14	289,849,090.59	3,726,536.55	1,397,698.78	2,328,837.78
01/2018	0.868815410	1,264	3.404	165	13	293,575,627.14	4,137,889.94	1,406,711.41	2,731,178.53
12/2017	0.881061190	1,270	3.404	166	12	297,713,517.08	3,349,402.64	1,411,861.41	1,937,541.23
11/2017	0.890973500	1,277	3.404	167	11	301,062,919.72	4,207,856.20	1,420,900.46	2,786,955.74
10/2017	0.903426340	1,287	3.404	168	10	305,270,775.92	2,451,002.14	1,421,551.66	1,029,450.47
09/2017	0.910679900	1,290	3.405	169	9	307,721,778.06	3,763,131.48	1,428,176.61	2,334,954.88
08/2017	0.921816610	1,298	3.406	170	8	311,484,909.54	4,045,845.07	1,435,847.29	2,609,997.78
07/2017	0.933789990	1,308	3.408	171	7	315,530,754.61	6,209,994.30	1,442,862.10	4,767,132.20
06/2017	0.952168010	1,324	3.407	173	6	321,740,748.92	3,760,411.36	1,449,000.22	2,311,411.14
05/2017	0.963296670	1,331	3.408	174	5	325,501,160.28	2,231,253.46	1,448,485.31	782,768.15
04/2017	0.969899900	1,333	3.407	175	4	327,732,413.74	3,004,815.57	1,451,231.42	1,553,584.15
03/2017	0.978792430	1,338	3.407	176	3	330,737,229.31	2,442,770.81	1,451,345.20	991,425.61
02/2017	0.986021630	1,340	3.408	177	2	333,180,000.12	2,299,428.84	1,450,920.72	848,508.11
01/2017	0.992826620	1,341	3.408	178	1	335,479,428.95	2,423,909.05	1,451,007.58	972,901.47
12/2016	1.000000000	1,341	3.408	179	0	337,903,338.00			
Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 85 6212 1000 U.S. 1 212 318 2000 Copyright 2018 Bloomberg Finance L.P. SN 113065 6597-4452-0 27-Feb-18 13:31:46 EST GMT-5:00									

FN AS8610	99-23 ³ _B	99-23 ¹ _B /99-24 ³ _B	Yield 3.037/3.028	Coupon 3.000%	BVAL	
As of 26 Feb	Fannie Mae Pool		Prepay 171PSA			
FN AS8610 Mtge	Export			Paydown Information		
FNCI 3 N	3.404(164)14	CUSIP 3138WJR83	PoolLevel			
Summary	Paydown	Collateral	Performance			
	Coupon 3	WALA 14	Issue 12/01/2016			
	WAC 3.4040	WAM 164	Maturity 01/01/2032			
	Orig Bal 337,903,338	Day Count 30/360	Pay Delay 54 (24) days			
Date	Factor	Coupon	Principal	Interest	Balance	Cashflow
Total			48,054,247	11,111,587		
03/26/2018		3.00000				
11) 02/26/2018	0.857787000	3.00000	3,726,536.55	733,939.07	289,849,090.59	4,460,475.62
12) 01/25/2018	0.868815410	3.00000	4,137,889.94	744,283.79	293,575,627.14	4,882,173.73
13) 12/26/2017	0.881061190	3.00000	3,349,402.64	752,657.30	297,713,517.08	4,102,059.94
14) 11/27/2017	0.890973500	3.00000	4,207,856.20	763,176.94	301,062,919.72	4,971,033.14
15) 10/25/2017	0.903426340	3.00000	2,451,002.14	769,304.45	305,270,775.92	3,220,306.58
16) 09/25/2017	0.910679900	3.00000	3,763,131.48	778,712.27	307,721,778.06	4,541,843.76
17) 08/25/2017	0.921816610	3.00000	4,045,845.07	788,826.89	311,484,909.54	4,834,671.96
18) 07/25/2017	0.933789990	3.00000	6,209,994.30	804,351.87	315,530,754.61	7,014,346.18
19) 06/26/2017	0.952168010	3.00000	3,760,411.36	813,752.90	321,740,748.92	4,574,164.26
20) 05/25/2017	0.963296670	3.00000	2,231,253.46	819,331.03	325,501,160.28	3,050,584.49
21) 04/25/2017	0.969899900	3.00000	3,004,815.57	826,843.07	327,732,413.74	3,831,658.64
22) 03/27/2017	0.978792430	3.00000	2,442,770.81	832,950.00	330,737,229.31	3,275,720.81
23) 02/27/2017	0.986021630	3.00000	2,299,428.84	838,698.57	333,180,000.12	3,138,127.41
24) 01/25/2017	0.992826620	3.00000	2,423,909.05	844,758.34	335,479,428.95	3,268,667.39
25) 12/01/2016	1.000000000				337,903,338.00	
Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 85 6212 1000 U.S. 1 212 318 2000 Copyright 2018 Bloomberg Finance L.P. SN 113065 6597-4452-0 27-Feb-18 13:32:15 EST GMT-5:00						

All of this data is also provided electronically in “Generic FNMA 3 Mtge.xlsx”.

- Comfortable that you understand the security, it is time to price it. You begin with a simple PSA model. Calibrate the model to the historical prepayments of your pool (given the lumpy nature of prepayment, it probably makes sense to calibrate to a moving average of prepayments over the last three or six months, rather than just the last month). Use the model to project the cashflows of your security (at this stage, simplify the problem by assuming that all loans in the pool are identical). Create projections like these (except yours will be calibrated properly and go out to maturity of the loans):

CFT
Enter all values and hit <GO>

FN AS8610 Mtge Scenarios Stratify Actions Settings Yield Table

FNCI 3 N 3.404(164)14 CUSIP 3138WJR83 Pool Level As of 02/2018

2/2018 CPR VPR CDR SEV 30D 60+ 90+ Bkpr Frel REO CumLoss 1st Proj 3/25/2018 Day Count 30/360
IM 9.2 0 -- -- -- -- -- -- -- -- -- Freq Monthly Delay 24 Created 12/1/2016

1) Price-to-Yield Cashflows 30 Table 30 Graph 30 Close Report

Settle 0 MED 03/15/2018

Horizon Controls 171 PSA

Prepay Vary 0

Price 99-24³ 3.0277

Avg Life 4.87

Mod Duration 4.32

Prin Win Date 4/18-10/31

I Spread 37

10 Bond Flow

Orig Bal 337,903,338 USD Your Orig Bal 337,903,338

Prev Bal 287,195,457 Your Prev Bal 287,195,457

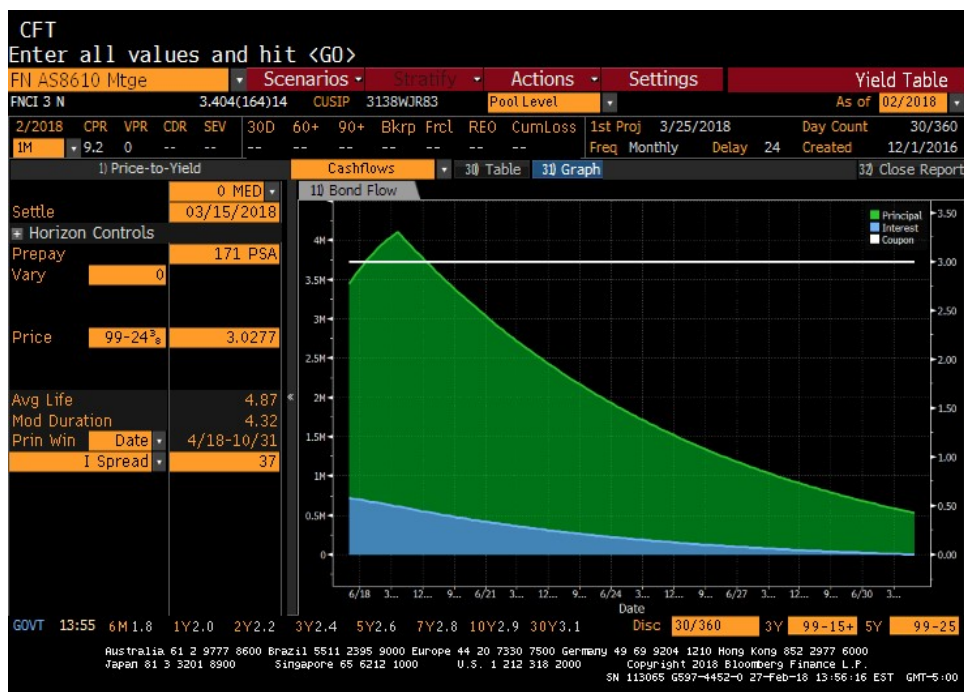
Accrued 0.1167 for 14 days, Start 03/01/18, Delay 24, WAL 4.871

Show precise amount Monthly

Dates	Balance	Sched	Unsched	Interest	Cashflow	Coupon
Totals	147,484,25	139,711,20	41,732,52	328,927,98		
1. 04/25/2018	284,469,970	1,388,330	1,337,157	717,989	3,443,475	3.000
2. 05/25/2018	281,674,707	1,385,754	1,409,509	711,175	3,506,438	3.000
3. 06/25/2018	278,811,802	1,382,766	1,480,139	704,187	3,567,091	3.000
4. 07/25/2018	275,883,448	1,379,365	1,548,989	697,030	3,625,384	3.000
5. 08/25/2018	272,891,888	1,375,555	1,616,005	689,709	3,681,268	3.000
6. 09/25/2018	269,839,418	1,371,336	1,681,134	682,230	3,734,700	3.000
7. 10/25/2018	266,728,380	1,366,711	1,744,326	674,599	3,785,636	3.000
8. 11/25/2018	263,561,161	1,361,683	1,805,536	666,821	3,834,040	3.000
9. 12/25/2018	260,340,189	1,356,255	1,864,717	658,903	3,879,875	3.000
10. 01/25/2019	257,067,931	1,350,430	1,921,829	650,850	3,923,109	3.000
11. 02/25/2019	253,746,887	1,344,211	1,976,833	642,670	3,963,714	3.000
12. 03/25/2019	250,379,590	1,337,603	2,029,694	634,367	4,001,664	3.000
13. 04/25/2019	246,968,601	1,330,611	2,080,378	625,949	4,036,938	3.000

GOVT 13:55 6M1.8 1Y2.0 2Y2.2 3Y2.4 5Y2.6 7Y2.8 10Y2.9 30Y3.1 Disc 30/360 3Y 99-15+ 5Y 99-25

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2018 Bloomberg Finance L.P. SN 113065 G597-4452-0 27-Feb-18 13:56:03 EST GMT-5:00



Plot your projected cashflows to make sure they look like PSA projections should.

The final step is to **discount**. For this, you need a spot rate curve and an assumption for the spread over spot rates. You know how to obtain the spot rate curve from coupon-bearing Treasuries, but to save time you may use key rates from zero-coupon STRIPs provided in “US Sovereign Strips.xlsx”.

For a reasonable spread over Treasuries, you look at Bloomberg again. You see that the current market for 3% FNMA mortgage pools like yours is about 52bp over spot rates (Bloomberg's z-spread).

[illegible]

Finally, once you valued the security, value it again with a small parallel shift of the spot discount rate curve. What is the DV01 and modified duration of the security? Be explicit about your calculations.

Using the Bloomberg median changes in PSA from +/- 50bp changes in mortgage rates, re-evaluate the DV01 and modified duration of the security. Note that the forecasts Bloomberg provides are for the generic pool (again, all FNMA 3% coupon pools) which have had somewhat different prepayment behavior relative to the specific 2016 vintage pool you are evaluating. Therefore, you need to make some assumptions about how the PSA forecasts above can be used for your pool.

Finally, comment on the differences in the risk characteristics of the pool when you take into account the change in prepayment due to interest rate changes. How good do you expect this local approximation to perform if all of the sudden rates change by +/-2%?