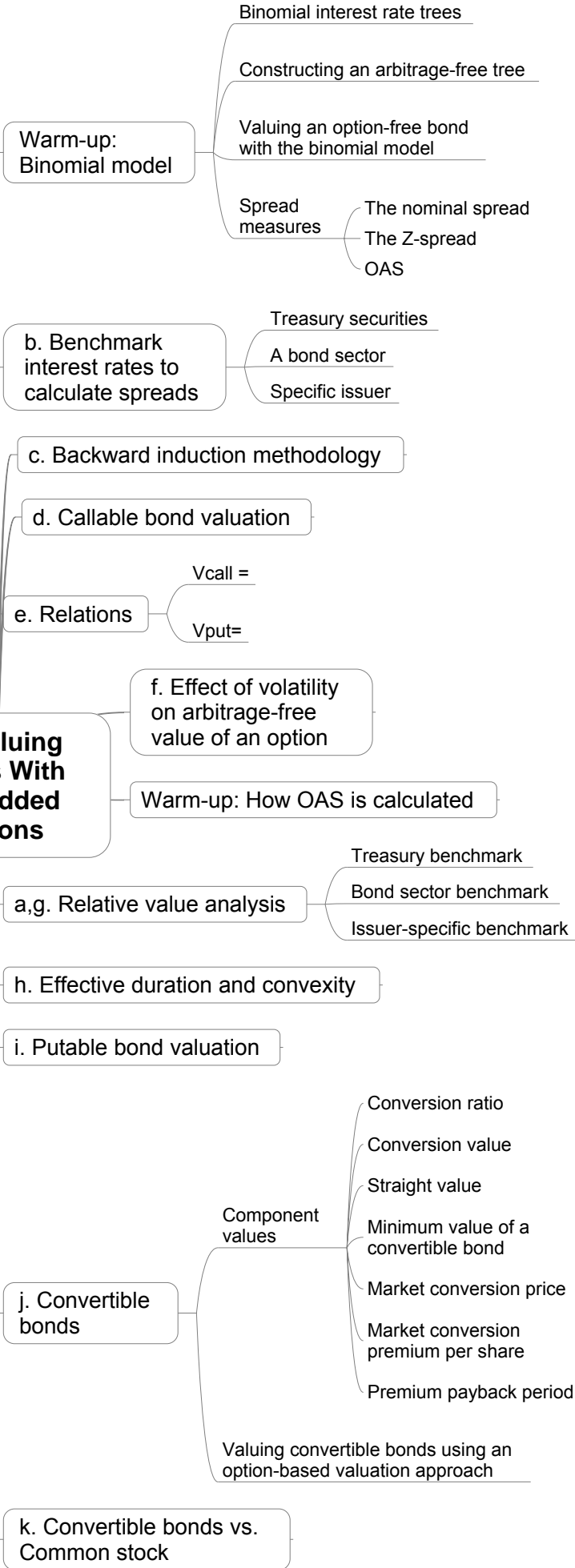


56. Valuing Bonds With Embedded Options



- a. Mortgage loans
- b. Mortgage passthrough securities
- d. Measuring prepayment speeds
 - CPR
 - PSA
- c. Calculate prepayment amount for a month
- f.
 - Factors affecting prepayments
 - Prevailing mortgage rates
 - Housing turnover
 - Characteristics of the underlying mortgages
 - Types of prepayment risk
 - Contraction risk
 - Extension risk
- e. Average life of an MBS

57. Mortgaged-Backed Sector Of The Bond Market

- CMOs
 - g. Creation and Matching of assets and liabilities
 - h. Tranches
 - Sequential Pay
 - Accrual tranche
 - Planned Amortization Class (PAC)
 - Support Tranche
 - i. Risks and Performance of each type of CMO tranche

- j. Stripped MBS
- k. MBS
 - Agency
 - Nonagency

- Warm-up: Commercial MBS
- l. CMBS vs Residential MBS
- m. CMBS: Structure and Call protection

LOAN AMORTIZATION SCHEDULE

Loan amount	500,000
Mortgage rate (per month)	1%
Number of months	360

Scheduled total pmt	\$5,143.06
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Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Period	Beginning Principal	Scheduled total pmt	Interest pmt	Scheduled principal pmt	Beg. Pr less scheduled pr. Pmt
1	500,000	5,143	5,000	143	499,857
2	499,857	5,143	4,999	144	499,712
3	499,712	5,143	4,997	146	499,567
4	499,567	5,143	4,996	147	499,419
5	499,419	5,143	4,994	149	499,270
175	433,500	5,143	4,335	808	432,692
176	432,692	5,143	4,327	816	431,876
177	431,876	5,143	4,319	824	431,051
178	431,051	5,143	4,311	833	430,219
179	430,219	5,143	4,302	841	429,378
180	429,378	5,143	4,294	849	428,529
181	428,529	5,143	4,285	858	427,671
182	427,671	5,143	4,277	866	426,804
183	426,804	5,143	4,268	875	425,929
184	425,929	5,143	4,259	884	425,046
185	425,046	5,143	4,250	893	424,153
186	424,153	5,143	4,242	902	423,252
187	423,252	5,143	4,233	911	422,341
188	422,341	5,143	4,223	920	421,421
189	421,421	5,143	4,214	929	420,492
190	420,492	5,143	4,205	938	419,554
191	419,554	5,143	4,196	948	418,607
192	418,607	5,143	4,186	957	417,650
193	417,650	5,143	4,176	967	416,683
194	416,683	5,143	4,167	976	415,707
195	415,707	5,143	4,157	986	414,721
196	414,721	5,143	4,147	996	413,725
197	413,725	5,143	4,137	1,006	412,719
198	412,719	5,143	4,127	1,016	411,703
199	411,703	5,143	4,117	1,026	410,677
200	410,677	5,143	4,107	1,036	409,641
358	15,126	5,143	151	4,992	10,134
359	10,134	5,143	101	5,042	5,092
360	5,092	5,143	51	5,092	0

LOAN AMORTIZATION SCHEDULE

Loan amount	500,000
Mortgage rate (per mth)	1%
Number of months	360

PSA	100
m=1 to 30:	0.2%
m=31 or more	6%

Scheduled total pmt	\$5,143.06
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average life: 86.82

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11	Col 12
Period	Beginning Principal	Scheduled total pmt	Interest pmt	Scheduled principal pmt	Beg. Pr less scheduled pr. Pmt	CPR	SMM	Prepmt	Ending principal	Weights for Macaulay Duration	Life
1	500,000	5,143	5,000	143	499,857	0.20%	0.0167%	83	499,774	0.0005	0.0005
2	499,774	5,143	4,998	145	499,628	0.40%	0.0334%	167	499,461	0.0006	0.0012
3	499,461	5,143	4,995	148	499,313	0.60%	0.0501%	250	499,063	0.0008	0.0024
4	499,063	5,143	4,991	152	498,910	0.80%	0.0669%	334	498,576	0.0010	0.0039
5	498,576	5,143	4,986	157	498,419	1.00%	0.0837%	417	498,002	0.0011	0.0057
80	291,518	5,143	2,915	2,228	289,290	6.00%	0.5143%	1,488	287,802	0.0074	0.5945
81	287,802	5,143	2,878	2,265	285,537	6.00%	0.5143%	1,469	284,069	0.0075	0.6048
82	284,069	5,143	2,841	2,302	281,766	6.00%	0.5143%	1,449	280,317	0.0075	0.6152
83	280,317	5,143	2,803	2,340	277,977	6.00%	0.5143%	1,430	276,548	0.0075	0.6257
84	276,548	5,143	2,765	2,378	274,170	6.00%	0.5143%	1,410	272,760	0.0076	0.6363
85	272,760	5,143	2,728	2,415	270,345	6.00%	0.5143%	1,390	268,954	0.0076	0.6470
86	268,954	5,143	2,690	2,454	266,501	6.00%	0.5143%	1,371	265,130	0.0076	0.6578
87	265,130	5,143	2,651	2,492	262,638	6.00%	0.5143%	1,351	261,288	0.0077	0.6686
88	261,288	5,143	2,613	2,530	258,757	6.00%	0.5143%	1,331	257,427	0.0077	0.6795
89	257,427	5,143	2,574	2,569	254,858	6.00%	0.5143%	1,311	253,547	0.0078	0.6906
90	253,547	5,143	2,535	2,608	250,940	6.00%	0.5143%	1,291	249,649	0.0078	0.7017
91	249,649	5,143	2,496	2,647	247,002	6.00%	0.5143%	1,270	245,732	0.0078	0.7129
92	245,732	5,143	2,457	2,686	243,046	6.00%	0.5143%	1,250	241,796	0.0079	0.7242
93	241,796	5,143	2,418	2,725	239,071	6.00%	0.5143%	1,230	237,842	0.0079	0.7356
94	237,842	5,143	2,378	2,765	235,077	6.00%	0.5143%	1,209	233,868	0.0079	0.7470
95	233,868	5,143	2,339	2,804	231,064	6.00%	0.5143%	1,188	229,875	0.0080	0.7586
96	229,875	5,143	2,299	2,844	227,031	6.00%	0.5143%	1,168	225,863	0.0080	0.7703
97	225,863	5,143	2,259	2,884	222,979	6.00%	0.5143%	1,147	221,832	0.0081	0.7821
98	221,832	5,143	2,218	2,925	218,907	6.00%	0.5143%	1,126	217,782	0.0081	0.7939
99	217,782	5,143	2,178	2,965	214,816	6.00%	0.5143%	1,105	213,712	0.0081	0.8059
140	33,822	5,143	338	4,805	29,017	6.00%	0.5143%	149	28,868	0.0099	1.3871
141	28,868	5,143	289	4,854	24,013	6.00%	0.5143%	124	23,890	0.0100	1.4038
142	23,890	5,143	239	4,904	18,986	6.00%	0.5143%	98	18,888	0.0100	1.4205
143	18,888	5,143	189	4,954	13,934	6.00%	0.5143%	72	13,862	0.0101	1.4374
144	13,862	5,143	139	5,004	8,858	6.00%	0.5143%	46	8,812	0.0101	1.4544
145	8,812	5,143	88	5,055	3,757	6.00%	0.5143%	19	3,738	0.0101	1.4715
146	3,738	3,775	37	3,738	-			-	-	0.0075	1.0915

LOAN AMORTIZATION SCHEDULE

Loan amount	500,000
Mortgage rate (per month)	1%
Number of months	360

PSA	90
m=1 to 30:	0.2%
m=31 or more	6%

Scheduled total pmt	\$5,143.06
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Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10
Period	Beginning Principal	Scheduled total pmt	Interest pmt	Scheduled principal pmt	Beg. Pr less scheduled pr. Pmt	CPR	SMM	Prepmt	Ending principal
1	500,000	5,143	5,000	143	499,857	0.18%	0.0150%	75	499,782
2	499,782	5,143	4,998	145	499,637	0.36%	0.0300%	150	499,487
3	499,487	5,143	4,995	148	499,338	0.54%	0.0451%	225	499,113
4	499,113	5,143	4,991	152	498,961	0.72%	0.0602%	300	498,661
5	498,661	5,143	4,987	156	498,504	0.90%	0.0753%	375	498,129
80	307,999	5,143	3,080	2,063	305,936	5.40%	0.4615%	1,412	304,524
81	304,524	5,143	3,045	2,098	302,426	5.40%	0.4615%	1,396	301,030
82	301,030	5,143	3,010	2,133	298,897	5.40%	0.4615%	1,380	297,518
83	297,518	5,143	2,975	2,168	295,350	5.40%	0.4615%	1,363	293,987
84	293,987	5,143	2,940	2,203	291,784	5.40%	0.4615%	1,347	290,437
85	290,437	5,143	2,904	2,239	288,198	5.40%	0.4615%	1,330	286,868
86	286,868	5,143	2,869	2,274	284,594	5.40%	0.4615%	1,314	283,280
87	283,280	5,143	2,833	2,310	280,970	5.40%	0.4615%	1,297	279,673
88	279,673	5,143	2,797	2,346	277,327	5.40%	0.4615%	1,280	276,047
89	276,047	5,143	2,760	2,383	273,664	5.40%	0.4615%	1,263	272,401
90	272,401	5,143	2,724	2,419	269,982	5.40%	0.4615%	1,246	268,736
91	268,736	5,143	2,687	2,456	266,280	5.40%	0.4615%	1,229	265,051
92	265,051	5,143	2,651	2,493	262,559	5.40%	0.4615%	1,212	261,347
93	261,347	5,143	2,613	2,530	258,817	5.40%	0.4615%	1,195	257,623
94	257,623	5,143	2,576	2,567	255,056	5.40%	0.4615%	1,177	253,879
95	253,879	5,143	2,539	2,604	251,275	5.40%	0.4615%	1,160	250,115
96	250,115	5,143	2,501	2,642	247,473	5.40%	0.4615%	1,142	246,331
97	246,331	5,143	2,463	2,680	243,651	5.40%	0.4615%	1,125	242,527
98	242,527	5,143	2,425	2,718	239,809	5.40%	0.4615%	1,107	238,702
99	238,702	5,143	2,387	2,756	235,946	5.40%	0.4615%	1,089	234,857
140	62,994	5,143	630	4,513	58,481	5.40%	0.4615%	270	58,211
141	58,211	5,143	582	4,561	53,650	5.40%	0.4615%	248	53,403
142	53,403	5,143	534	4,609	48,794	5.40%	0.4615%	225	48,569
143	48,569	5,143	486	4,657	43,911	5.40%	0.4615%	203	43,709
144	43,709	5,143	437	4,706	39,003	5.40%	0.4615%	180	38,823
145	38,823	5,143	388	4,755	34,068	5.40%	0.4615%	157	33,910
146	33,910	5,143	339	4,804	29,107	5.40%	0.4615%	134	28,972
147	28,972	5,143	290	4,853	24,119	5.40%	0.4615%	111	24,008
148	24,008	5,143	240	4,903	19,105	5.40%	0.4615%	88	19,016
149	19,016	5,143	190	4,953	14,063	5.40%	0.4615%	65	13,999
150	13,999	5,143	140	5,003	8,995	5.40%	0.4615%	42	8,954
151	8,954	5,143	90	5,054	3,900	5.40%	0.4615%	18	3,882
152	3,882	3,921	39	3,882	-			-	-

LOAN AMORTIZATION SCHEDULE

Loan amount	500,000
Mortgage rate (per month)	1%
Number of months	360

PSA	300
m=1 to 30:	0.2%
m=31 or more	6%

Scheduled total pmt	\$5,143.06
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Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	90-300 PSA90 PAC tranche	
Period	Beginning Principal	Scheduled total pmt	Interest pmt	Scheduled principal pmt	Beg. Pr less scheduled pr. Pmt	CPR	SMM	Prepmt	Ending principal		
1	500,000	5,143	5,000	143	499,857	0.60%	0.0501%	251	499,606	75	75
2	499,606	5,143	4,996	147	499,459	1.20%	0.1006%	502	498,957	150	150
3	498,957	5,143	4,990	153	498,804	1.80%	0.1513%	754	498,049	225	225
4	498,049	5,143	4,980	163	497,887	2.40%	0.2022%	1,007	496,880	300	300
5	496,880	5,143	4,969	174	496,705	3.00%	0.2535%	1,259	495,446	375	375
6	495,446	5,143	4,954	189	495,258	3.60%	0.3051%	1,511	493,747	450	450
7	493,747	5,143	4,937	206	493,541	4.20%	0.3569%	1,762	491,780	525	525
8	491,780	5,143	4,918	225	491,554	4.80%	0.4091%	2,011	489,543	600	600
9	489,543	5,143	4,895	248	489,296	5.40%	0.4615%	2,258	487,038	674	674
10	487,038	5,143	4,870	273	486,765	6.00%	0.5143%	2,503	484,261	749	749
60	176,093	5,143	1,761	3,382	172,711	18.00%	1.6402%	2,833	169,878	1719	1,719
61	169,878	5,143	1,699	3,444	166,434	18.00%	1.6402%	2,730	163,704	1704	1,704
62	163,704	5,143	1,637	3,506	160,198	18.00%	1.6402%	2,627	157,570	1689	1,689
63	157,570	5,143	1,576	3,567	154,003	18.00%	1.6402%	2,526	151,477	1675	1,675
64	151,477	5,143	1,515	3,628	147,849	18.00%	1.6402%	2,425	145,424	1660	1,660
65	145,424	5,143	1,454	3,689	141,735	18.00%	1.6402%	2,325	139,410	1645	1,645
66	139,410	5,143	1,394	3,749	135,661	18.00%	1.6402%	2,225	133,436	1630	1,630
67	133,436	5,143	1,334	3,809	129,628	18.00%	1.6402%	2,126	127,502	1615	1,615
68	127,502	5,143	1,275	3,868	123,633	18.00%	1.6402%	2,028	121,606	1600	1,600
69	121,606	5,143	1,216	3,927	117,679	18.00%	1.6402%	1,930	115,749	1585	1,585
70	115,749	5,143	1,157	3,986	111,763	18.00%	1.6402%	1,833	109,930	1569	1,569
71	109,930	5,143	1,099	4,044	105,886	18.00%	1.6402%	1,737	104,149	1554	1,554
72	104,149	5,143	1,041	4,102	100,048	18.00%	1.6402%	1,641	98,407	1539	1,539
73	98,407	5,143	984	4,159	94,248	18.00%	1.6402%	1,546	92,702	1523	1,523
74	92,702	5,143	927	4,216	88,486	18.00%	1.6402%	1,451	87,035	1507	1,451
75	87,035	5,143	870	4,273	82,762	18.00%	1.6402%	1,357	81,405	1492	1,357
76	81,405	5,143	814	4,329	77,076	18.00%	1.6402%	1,264	75,811	1476	1,264
77	75,811	5,143	758	4,385	71,426	18.00%	1.6402%	1,172	70,255	1460	1,172
78	70,255	5,143	703	4,441	65,814	18.00%	1.6402%	1,079	64,735	1444	1,079
79	64,735	5,143	647	4,496	60,239	18.00%	1.6402%	988	59,251	1428	988
88	16,658	5,143	167	4,976	11,681	18.00%	1.6402%	192	11,490	1280	192
89	11,490	5,143	115	5,028	6,462	18.00%	1.6402%	106	6,356	1263	106
90	6,356	5,143	64	5,080	1,276	18.00%	1.6402%	21	1,255	1246	21
91	1,255	1,268	13	1,255	-			-	-	1229	-

