The Effect of the Real Estate Cycle on Commercial Mortgage and CMBS

Beyondbond

INTRODUCTION

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The basic principle underlying the option approach is that the investor/lender in a CMBS/commercial mortgage is receiving a higher nominal yield than Treasury securities in return for giving the property owner the right to default on the mortgage payments, and thereby terminate his obligations under the mortgage, by giving up his property. The property owner will, loosely speaking, exercise his default option when 1) he can no longer pay his debt service and 2) the expected value of his property is less than the expected market value of his future obligations. The expected value of his future obligations equals the expected present value of his debt service less the value of his default option. Since most commercial mortgages have strong prepayment protection we assume here that they are non-callable. At maturity the value of the default option is the greater of zero and the final payment due less the property value. Prior to maturity the calculation of the value of the default option requires an option pricing model[1].

For those unfamiliar with the option approach, one can think of the analysis as a large scale simulation (with associated probabilities) of future possible scenarios. The computed OAS is the expected spread that is achievable after taking into account the probability of defaults including their timing and the resulting losses. OAS enables the investor to look at an adjustment to the nominal yield, which is based on no defaults and no losses. Our basic idea is that as the peak in the real estate cycle approaches, the probability of default during the life of the loan obviously increases. The default probabilities are larger because the mortgage does not have a chance to deleverage, and the property has less of a chance to appreciate in value early in the life of the mortgage. For an equivalently leveraged commercial mortgage or CMBS with equivalent subordination levels, this should lead to an adjustment to required nominal spreads based on the current stage in the cycle. The OAS is a quantification of the adjustment to the yield of the CMBS classes and commercial mortgages.

Our approach is to first structure a CMBS from a pool of ten loans with a range of loan-to-values (LTVs) and debt service coverage ratios (DSCRs). The CMBS and loan spreads reflect the pricing conditions of the market in December 1998. We then compute OAS for each of the CMBS classes as well as the loan pool, assuming no trend in net operating income (NOI) or property value. This corresponds to the case where investors make the assumption that there is no real estate cycle, so that the volatility in NOI causes property income to fluctuate around the current level of NOI. This case is then compared to various trend scenarios in NOI. In addition, alternative CMBS structures are examined, and the effects on OAS of more or less leveraged loan portfolios are shown.

[1]For a full explanation of the OAS approach see David P. Jacob, C.H. Ted Hong, and Laurence H. Lee, "An Options Approach to Commercial Mortgages and CMBS Valuation and Risk Analysis, " Chapter 17 in Frank J. Fabozzi and David . Jacob (eds.) The Handbook of Commercial Mortgage-Backed Securities (New Hope, Pa: Frank J. Fabozzi Associates, 1997)

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Loan Pool Description

We begin with laying out the details of the example that we are going to use.
The pool sample consists of ten loans, each $20 million in size. They are ten-year balloon loans, all with 7.00%[2] coupons and follow a 30-year amortization schedule. We assumed that the loans are non-prepayable. The average life of each loan is 9.4 years. We assume that the NOIs of each of the underlying properties are not correlated and have the same volatility. In addition, the loans have the following credit characteristics:

Exhibit 1:

Loan	LTV	DSCR
1	61.60%	1.48x
2	63.30%	1.44x
3	65.10%	1.40x
4	67%	1.36x
5	69%	1.32x
6	71.10%	1.28x
7	73.30%	1.24x
8	75.70%	1.20x
9	78.30%	1.16x
10	81.10%	1.12

The Pool's loan-to-value = 70% and weighted average debt service coverage ratio (WADSCR) = 1.30x.

Market Environment

The US Treasury Curve was assumed to be:

Term	3 mo.	6 mo.	1yr.	2yr.	5yr.	10yr	30yr
Yield	4.42%	4.48%	4.50%	4.61%	4.61%	4.76%	5.52%

The spread on the loans is 226bp (to the curve).

The loans are structured into the following CMBS classes shown in Exhibit 2.

For this deal structure, we first computed option-adjusted spreads based on a no-trend in NOI assumption, at various levels of NOI volatility ranging from 6% to 30% on an annual basis. In Exhibit 3 below, we compare the OAS for each class to the nominal yield spread at each level of NOI volatility. We also show the expected (probability weighted) principal loss to each class under each volatility scenario.

In order to understand this exhibit, we first focus on the collateral pool which is shown in the first row. The nominal spread on the pool was +226 bp, which is what the lender would achieve under a zerodefault scenario. At higher levels of NOI volatility, the OAS is below the nominal spread to reflect the adjustment to the spread due to increasing probability of defaults and losses. For example, at a 12% NOI volatility, the OAS is 179 bp. This represents a 47 bp loss in expected spread due to expected losses of principal of 4.7%. The way to visualize this is to imagine many scenarios with NOI changing up and down with a 12% volatility.[3] Under some of these paths, where NOI is declining, defaults and losses occur in some time periods. The average loss of principal on this pool of loans across all these paths and time periods is 4.7%.

[2]In a more realistic example we would have varied the loan rate or spread based on the risk level of each loan, i.e. as a function of its respective LTV, DSCR, and NOI. To avoid weighted average coupon effects, we chose to use the same coupon. However, the basic results obtained here would be the same regardless of the choice of coupons.
[3]The interest rate also varies corresponding to its volatility. The property value changes as a function of the interest rates and NOI levels. Note that we need the entire probability space to determine the timing and loss severity of the loan defaults. However, because of the path dependence for CMBS classes, a Monte Carlo simulation is used to obtain OAS and other relevant measures for each bond.

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As one scans down to the AAA securities, one can see that even at the highest level of NOI volatility there are barely any losses to principal under any scenarios. This is by the design of the senior-subordination structure, which allocates losses to the lowest outstanding class. The variation in the OAS of the AAA securities is a function of the allocation of principal recoveries from foreclosures causing the bonds to shorten in average life. The OAS drops because the investor receives principal back early at par, while he paid a premium price of 101.5.[4]

Exhibit 2: Deal Structure

Class	Amount mil.	Sub	Coupon %	Price %	Treasury %	Spread bp	WAL yr	Durantion yr
Collateral	$200.00		7.00	100.00	4.74	226	9.4	6.7
AAA (short)	$24.50	28.00	6.35	101.50	4.61	138	5.1	4.2
AAA (long)	$119.50	28.00	6.42	101.50	4.76	146	10	7.3
AA	$12.00	22.00	6.52	100.00	4.76	176	10	7.3
A	$11.00	16.50	6.77	100.00	4.76	201	10	7.2
BBB	$9.00	12.00	7.00	96.05	4.76	281	10	7
BBB-	$3.00	10.50	7.00	89.60	4.76	381	10	6.9
BB+	$8.50	6.25	7.00	77.31	4.76	600	10	6.6
BB+	$2.00	5.25	7.00	76.05	4.76	625	10	6.6
BB-	$2.00	4.25	7.00	67.96	4.76	800	10	6.3
B	$3.50	2.50	7.00	63.93	4.76	900	10	6.2
B	$1.00	2.00	7.00	63.86	4.76	950	10	6.1
B-	$1.50	1.25	7.00	56.61	4.76	1100	10	5.9
UR	$2.50	0.00	7.00	29.20	4.76	2424	10	4.2
CS1 (IO class)	$10.00		0.60	1.28	4.58	500	1.8cf	1.6
PS1 (IO class)	$190.00		0.46	2.83	4.61	500	5.1cf	4.2

Notes on the structure:

1. The two AAAs are structured to be sequential for principal payments and pro-rata for allocation of losses.
2. The first IO class, CS1, was created by stripping 60bp from the first $10 million of principal of the short AAA class. The second IO class, PS1, has interest stripped from the AAAs, AA, and single A class.
3. The average life for the IO classes is noted with a “cf” to indicate cash flow average life.
4. The duration calculated here, is the modified duration.
5. The spreads and subordination levels are reasonably representative of the time period corresponding to the end of 1998.
6. While the second IO class is usually priced at a tighter spread than the first IO, we left them the same in our exam so that the relative OAS adjustment is easily observed.

[4] There is another effect, which is noticeable in the second AAA class. The OAS is higher than the nominal spread due to the positive slope of the yield curve. At very high levels of volatility this effect is outweighed by the early principal payments.

Exhibit 3: OAS in bp at specified level of volatility/Expected Loss of principal in % (Assumes no trend in NOI)

Class	Amount mil.	Sub	Coupon %	Price %	Treasury %	Spread bp	WAL yr	Durantion yr
Collateral	$200.00		7.00	100.00	4.74	226	9.4	6.7
AAA (short)	$24.50	28.00	6.35	101.50	4.61	138	5.1	4.2
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AA	$12.00	22.00	6.52	100.00	4.76	176	10	7.3
A	$11.00	16.50	6.77	100.00	4.76	201	10	7.2
BBB	$9.00	12.00	7.00	96.05	4.76	281	10	7
BBB-	$3.00	10.50	7.00	89.60	4.76	381	10	6.9
BB+	$8.50	6.25	7.00	77.31	4.76	600	10	6.6
BB+	$2.00	5.25	7.00	76.05	4.76	625	10	6.6
BB-	$2.00	4.25	7.00	67.96	4.76	800	10	6.3
B	$3.50	2.50	7.00	63.93	4.76	900	10	6.2
B	$1.00	2.00	7.00	63.86	4.76	950	10	6.1
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PS1 (IO class)	$190.00		0.46	2.83	4.61	500	5.1cf	4.2

At the other end of the credit spectrum, the BB-, which is priced at a nominal spread of +800bp, has an OAS of +426 at a 12% NOI volatility (which is not bad considering the 34.6% expected loss of principal), but an OAS of -60bp at a 16% NOI volatility and –782bp OAS at a 20% NOI volatility.

This kind of table can be very useful for a relative value investor. For example, one can see why one might prefer the long AAA bond to the collateral, since its yield holds up better than the collateral under high levels of expected default even though it has a lower yield than the collateral under less stressful volatility assumptions. Similarly a less risk adverse investor might find the BB- attractive relative to the collateral because of the high relative yield even under the 12% NOI volatility assumption. However, it is less clear why an investor would prefer the A rated bond to the collateral, since it has a lower OAS at low levels of NOI volatility and at very high levels of NOI volatility! It would appear that the A rated bond, at a +201bp nominal spread does not provide much extra value relative to the collateral. (A similar result is found in “The Efficient Frontier for CMBS and Commercial Mortgages Using a Mean-Variance Framework”, David P. Jacob and Jignesh Patel, March 1999). Perhaps, investors are willing to give up some yield relative to the collateral for the benefits of owning a security instead of a whole loan.

Similarly, the BB- class appears to offer more value than the B rated class. Unless NOI volatility is 9% or below, the BB has higher OAS, and the expected principal loss is always less. In the market place the buyer of the single B rated class is often the same as the buyer of the unrated class. As we discuss in the next paragraph, the unrated class in our example could be an attractive security for some investors, but part of the price they have to pay to get it may include purchasing the single B class.

The unrated class presents an interesting opportunity at the nominal spread of +2424bp or 29% nominal yield. It appears superior to everything rated BB and below. While this is one way of interpreting the results, and on average under the above assumptions it will outperform the BB and below, the unrated class still has greater risk unless one is able to rely on the “Law of Large Numbers” from probability theory. In layman’s terms, if one could purchase many of these classes, the result would be true on average. However, for small portfolios one cannot achieve the average performance. There are many more scenarios under which the unrated class will be wiped out resulting in negative yields for the investor, whereas the BB rated bonds remain untouched.

One way of observing this is the higher expected principal losses for the unrated class, no matter what the volatility on NOI is (unless it is zero). Thus for investors who are not able to purchase many unrated classes over various different time periods and who are unable to tolerate instances of severely poor performance, the class may not be an appropriate purchase regardless of how high the nominal yield and OAS are.

The exhibit also clearly illustrates the leverage created by the senior-subordinated structure. For example, using the 12% NOI volatility assumption, the single B-rated classes which has less than a tenth of the subordination of AAA classes, has a little more than ten times the expected loss of principal of the collateral.

The IO classes sometimes defy intuition. The first thing to keep in mind about the IO classes is that they are hurt by erosion of their notional principal, however it occurs. Assuming that no voluntary prepayment is permitted, erosion of principal can occur either from scheduled principal paydowns such as amortization, recoveries from foreclosures, or the allocation of losses. The second thing to understand about IO classes is that their cash flow is very front loaded. Thus, more so than with other classes, they are very sensitive to the timing of defaults. Early defaults, regardless of the recovery rate, are very damaging to the yield of the IO classes. High recovery rates translate into prepayments without penalty, and low recoveries result in the lowering of balances through the allocation of losses. At the other extreme, balloon defaults have no effect on the IO classes yield, regardless of the recovery.

In the current deal structure we have two IO classes. The first one, CS1, is created by stripping 60bp from the first AAA class. As a result, the impact of the first unscheduled $10 million of principal to come in from recoveries is absorbed by this class. To understand the vulnerability of this class, consider that if any one loan were to default during the time when the first AAA bond was outstanding and experience a recovery rate of more than 50%, it would wipe out the notional principal on which this IO is receiving income. The argument for purchasing this class by some investors is that early defaults are unlikely for newly underwritten loans. While this is generally true, the class is vulnerable if this turns out not to be the case. Moreover, the OAS model, by design incorporates the lower default rate into the early years of newly underwritten loans. So the first IO, would be a good buy in our example, only if one expected a relatively low NOI volatility. (As we will see in some later examples, when lower LTV loans were used, the results dramatically improve, and the first IO outperforms the second IO.) The second IO class, PS1, performs extremely well in our example. On an OAS basis, it outperforms every class above the BBB- rated bonds. (This result is corroborated in another report that we referred to earlier, entitled “The Efficient Frontier for CMBS and Commercial Mortgages Using a Mean-Variance Framework”.) The result is not too surprising considering that the IO is carved from the interest cash flows of the single A-rated class and above. However, even in deals where some of the IO comes from the lower rated classes as well, the performance of this IO class tends to stand up well, since again its cash flows are front loaded, and the large majority of its cash flows generally come from the most senior bond classes.

Most current deals do not use the two IO structure, but rather combine the two into one class. In Exhibit 4, we show the OAS table for the two IO structure compared to the combined IO class.

The results of the combined IO fall, as expected, between the two individual IO classes. They are closer to the PS1 performance, because it is so much larger in size (38 times larger). It is quite clear from Exhibit 4, why most deals today use the one IO structure. Nevertheless, as we noted above and will show in a later example, when the LTV on the loans is lower, a case could be made for the two IO structures. The results also would show CS1 in a better light if it were carved off of more than just $10 million in notional principal.

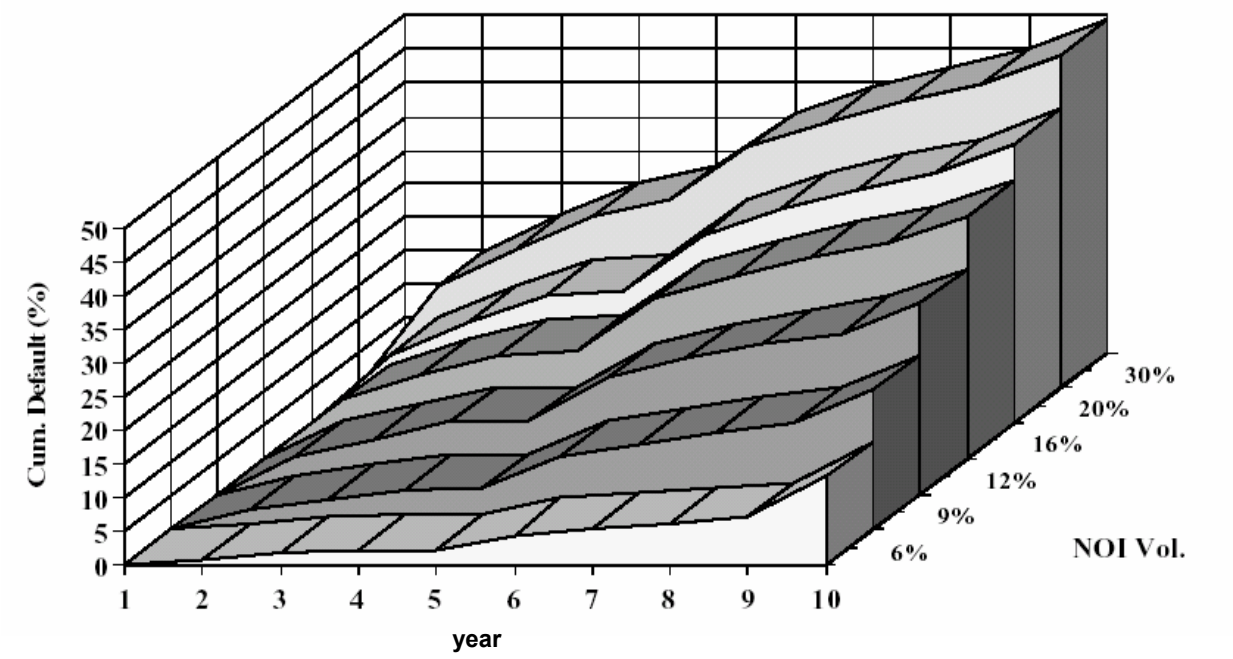
The pattern of defaults produced by the OAS model is worth looking at for a moment because it demonstrates the richness and depth of the OAS framework. Exhibit 5 shows the cumulative probability of default for the collateral. For the first year the probability of default is shown to be zero, even under the 30% NOI volatility assumption.

The probability begins to increase, with a jump occurring between years 5 and 6. Defaults then begin to level off. This is followed by another jump at the balloon date. This is consistent with empirical studies. With newly underwritten loans with DSCRs greater than one, it takes time for income to drop. Gradually the lower quality loans experience problems under certain paths. After they default, they are no longer part of the pool. On the other hand, along some paths, income improves, which provides a cushion against future declines. This combined with the benefits of amortization causes the leveling off in defaults. The balloon date causes additional stress, as the borrower has to come up with the balloon payment.

Exhibit 4: OAS in bp at specified level of volatility (assumes no trend in NOI)

Class	Nominal Spread	6%	9%	12%	16%	20%	30%
CS1 (short IO)	500	258	-253	-982	-1489	-1816	-2319
PS1 (long IO)	500	436	355	270	206	182	164
IO (combined)	500	434	350	261	194	168	148

Exhibit 5: Cumulative Default Probability at Specified NOI Volatility (assumes no trend in NOI)



The Effect of the Real Estate Cycle on Commercial Mortgage and CMBS

We now turn to the central topic of this research article, namely the impact of the real estate cycle on CMBS spreads. We use the same example as before, but instead of assuming that there is no trend in NOI and that any change in NOI is due to volatility, we assume that there is a real estate cycle and that we are at the peak in the cycle. We assume that NOI will actually trend down over the next ten years.[5] The property markets, at least in the past, have exhibited cycles, driven by imbalances between the supply and demand for space. Most real estate market participants would likely agree that we are, today, in a significantly more advanced stage in the real estate cycle than we were 7 years ago, when the CMBS market was in its nascent stage.

Exhibit 6 shows the OAS results for the collateral and CMBS classes of our sample deal. Looking across the top row and comparing it to the results of Exhibit 3, it is clear that the downward trend in NOI causes the OAS to be lower. For example, at a 12% NOI volatility the OAS for the collateral is 153bp compared to 179bp where there was no trend in NOI. The result should not be surprising, since the declining trend in NOI leads to, on average, lower coverage and value over time. Thus, the cumulative defaults will be higher, and the losses will be higher. The model enables us to quantify the effect. In our example, the downward trend in NOI causes the expected losses to be about 1.6 times larger.

In general, all the results in Exhibit 6 are worse when compared to those in Exhibit 3. The AAA bonds are still largely untouched even with the imposition of the cycle. This further demonstrates how well these classes are protected and the value that they offer. While the other senior classes are also reasonably well protected, they breakdown at the higher levels of NOI volatility. The biggest impact to the spread among the regular classes is felt by the single B rated classes. For example, the drop in the OAS (at a 12% NOI volatility) of the B- rated class from an OAS of 204bp to –366 bp, is a 279% drop in spread! For the buyer of this class, it would seem that he better be right about the trend in NOI not just the volatility. These lower rated classes are generally small in size, and they are highly leveraged with respect to defaults, as a result small differences in the default rate can make a tremendous difference in the realized yields.

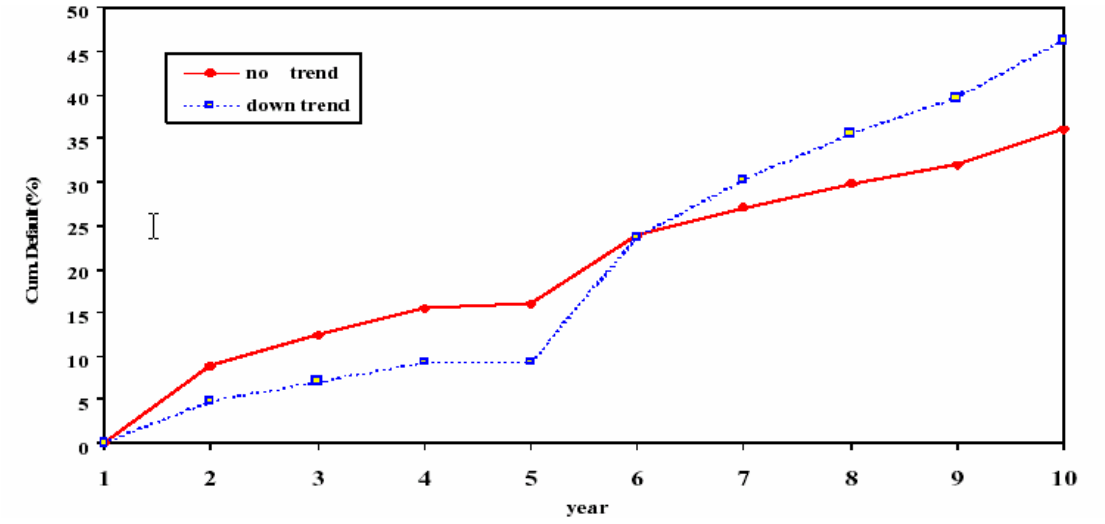
Exhibit 6: OAS in bp at specified level of volatility/Expected Loss of principal in % (assumes downward trend in NOI)

Class	Nominal Spread	OAS in bp/Expected Loss of Principal in %											
		6%		9%		12%		16%		20%		30%	
Collateral	226	209	2.4	185	4.6	153	7.4	101	11.4	45	15.5	-101	25
AAA Short	138	136	0	135	0	134	0	129	0	125	0	117	0
AAA Long	146	150	0	151	0	151	0	150	0	148	0.2	123	2.8
AA	176	178	0.1	174	0.9	170	1.5	157	3.2	107	9.1	-455	54.8
A	201	196	1.4	179	3.9	161	6.1	93	13.5	-91	31	-1109	81.6
BBB	281	259	4.1	223	8.5	162	15	-35	33.2	-396	57.7	-1594	91.1
BBB-	381	345	6.2	285	13.1	176	23.7	-147	48.9	-647	73	-1849	94.2
BB+	600	535	10.1	439	19.7	244	36.1	-222	64	-837	83.8	-2028	95.3
BB	625	518	15.2	360	29.1	31	51.8	-618	78.2	-1298	91	-2144	95.3
BB-	800	669	17.7	471	34.3	76	58.8	-616	82.4	-1274	92.4	-2207	95.4
B+	900	719	22.1	432	43.3	-54	67.9	-874	87.8	-1580	93.9	-2304	95.8
B	950	700	27.9	313	52.4	-307	75.8	-1238	91.2	-1873	94.9	-2393	96.6
B-	1100	797	31.4	333	58.5	-366	80.4	-1270	92.5	-1809	95.3	-2390	97.3
UR	2424	1960	45.2	1440	68.9	620	87.4	-82	93.8	-509	96	-1208	97.8
CS1 (Short IO)	500	274	0	-150	0	-299	0	-590	0	-707	0	-1117	0
PS1 (Long IO)	500	413	0	334	0	280	0	237	0	223	0	187	0

[5]A 20-year real estate cycle is assumed. The downward trend in NOI varies with respect to the volatility level. It ranges from 8% to 34%, corresponding to the volatility scenarios, 6-30%.

Once again the IO classes defy intuition. As before, the second IO class, PS1, stands up well under all scenarios and appears to offer significant value. However, there are some unusual results which show up, particularly in the case of the first IO, CS1. If we compare the OAS for CS1 shown in Exhibit 6 to the results in Exhibit 3, we find that the OAS is higher in all cases when there is a downward trend in NOI. This is counter-intuitive! How can it be that when the expected losses are higher that the OAS can be higher? Recall what we said earlier about IO classes. They are particularly sensitive to the timing of the defaults. The only way that the IO can be better off under the higher default scenarios is if the defaults are occurring later (or default with zero recoveries which can lead to an extension of the average life of the notional principal due to reduced amortization cash flow from the defaulted loans). As we examined the details of our results, we, in fact, did find that the defaults although higher were occurring later. We show the cumulative default in Exhibit 7.

Exhibit 7: Comparison of Cumulative Default Between No-Trend and a Downtrend (Assumes NOI Volatility of 16%)



One can see that while the defaults are ultimately greater for the downward NOI case, they are lower in the earlier years. The borrower is postponing the exercising of his default option until later. While this may seem counter-intuitive, it is actually very rational and correct from the option stand point. Because of the downward trend, the owner of the property is able to maximize the value of this option by waiting. The default option allows the borrower to extinguish the obligations under his debt agreement by defaulting and turning over his property. His option value is maximized by exercising his option later when the property is worth the least. Thus, when NOI is trending down, under some scenarios his default option value can outweigh the drop in property value and delay the timing of default. Of course, the declining NOI trend will lead to more defaults, but the defaults occur later. Bonds which are most sensitive to the timing of defaults are most affected. This is why CS1 performs better as shown in Exhibit 6. Similar results show up for the UR class under the higher NOI volatility assumptions for the same reason. For example, at a 20% NOI volatility assumption the OAS of the UR class is -509bp assuming a downward trend in NOI, compared to -677bp with no-trend. This is even with the larger expected principal losses.[6]

[6]The result is also evident in the first AAA class at higher levels of volatility. This is because the class is priced at 101.5, which in essence means it has a bit of IO embedded in it.

While we do not show the results here, the model is consistent in that if we do our analysis under the assumption that NOI is trending up, i.e. that we are at the beginning of the cycle things look better. If we assume that we are somewhere in the middle the results are somewhere in the middle. The point is that the timing of the cycle should impact the spread at which you purchase the CMBS class particularly the lower rated classes. This is true even if the loans are underwritten for the expected average NOI.

The last subject we cover in this paper is the effects of leverage. One of the trends that has been observed is that as real estate markets recover and particularly at the peaks lenders tend to provide more leverage, whereas at the beginning of the recoveries leverage is low reflecting conservative underwriting due to the recent memory of poor performance. Based on what we have seen here, the reverse ought to be true, higher leverage at the beginning of the cycle and lower as the cycle peaks. In the following two tables we show the effects of leverage on OAS.

Exhibit 8 compares the results for 50%, 70% and 90% LTV, and DSCR of 1.82x, 1.30x and 1.01x (assuming the same subordination levels).[7] Obviously, the lower leverage levels dramatically reduce the probability of defaults and result in higher OAS for all classes. It is interesting to note how much better the first IO class performs. This is because defaults occur later on when most, if not all of the cash flow of the IO has been received. The two IO structures were more prevalent in the earlier CMBS deals, particularly those deals with large low leverage loans. As before, if we applied a downward trend to the NOI the OAS numbers are generally lower.

For CMBS deals that are backed by loans that are more highly leveraged, and for which the rating agencies have not adequately increased the required subordination, the investor needs to be very optimistic about the stability of NOI.

Exhibit 8: OAS in bp at specified level of Loan Pool LTV (assumes NOI volatility of 16% and no trend imposed)

Class	Nominal Spread	OAS in bp			Expected Loss in %		
		50%	70%	90%	50%	70%	90%
Collateral	226	209	140	-98	2.1	7.4	17.2
AAA Short	138	134	117	73	0	0	0
AAA Long	146	149	149	115	0	0	1.7
AA	176	179	165	-59	0.1	1.9	21.6
A	201	203	160	-279	0.2	5.6	37.1
BBB	281	279	166	-598	0.7	13.4	55.8
BBB-	381	373	170	-822	1.6	22.3	66.9
BB+	600	577	205	-1103	3.6	36	78.6
BB	625	559	-71	-1793	9	53.1	89.3
BB-	800	698	-60	-1971	12.9	60.3	92.2
B+	900	694	-294	-2558	22.9	70.4	96.1
B	950	582	-617	-3265	36.4	78.7	98.3
B-	1100	586	-772	-3698	46.6	83.4	99.1
UR	2424	1853	-18	-3067	55.1	88.4	99.4
CS1 (short IO)	500	450	-1489	-4191	NA	NA	NA
PS1 (long IO)	500	453	206	-543	NA	NA	NA

[7]While it is likely that the different levels of leverage would result in different levels of subordination from the rating agencies, we left the subordination levels unchanged for comparative purposes.

Clearly the results for the high leverage scenario are terrible. What is also clear is that there are high levels of defaults even early on causing the first IO to be wiped out, yet the AAA survives. The results clearly demonstrate how careful investors have to be in assessing the correct leverage and coverage. In 1998, there were certainly deals that were getting done with leverage close to the 90% level. The widening in spreads in the fall of 1998 probably resulted in many marginal deals not getting done. However, investors/lenders have short memories and often try to convince themselves that the leverage is not too much. The OAS results show how bad things can be with the higher leverage. This is without any assumed peak in NOI. The combination of high leverage at the peak of the cycle should certainly cause investors/lenders to be cautious.

CONCLUSION

We have shown how the real estate cycle can have a significant effects on the value of commercial mortgages and CMBS, particularly those classes that are most sensitive to the timing of defaults. Investors need to adjust their targeted nominal spreads as a function of the timing of the real estate cycle. They also need to understand the risk profile of the lower rated CMBS even when the default adjusted spreads show these securities to have fundamental value. And, finally, rising leverage at a time when NOI is no longer rising should make investors especially cautious.

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