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CMBS Research

The Future Refinancing Crisis in Commercial Real Estate*

Estimates of the Magnitude of Refinancing Risk, Equity Deficiency and Losses from Maturity Defaults

Special Report

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I. Introduction

The lesson that was learned (or re-learned) in the commercial real estate (CRE) crash of the early 1990s was that problems associated with massive over-supply can plague the industry for many years. The lesson that will be learned in the current crash (with CRE prices declining by 40-50%, or more, from their peaks, the term crash is, once again, appropriate) is that problems emanating from the financing side—in particular, a massive deterioration in underwriting standards and a concurrent rise of excessive leverage—can lead to problems of a similar (or greater) magnitude, even without supply problems.

While most attention in commercial real estate today is focused on the dramatic deterioration in term loan performance (i.e. the performance of loans prior to maturity), we believe that a potentially even more troublesome issue is the extent to which loans originated during the 2005-2007 period will encounter problems refinancing at maturity. To date, this issue has largely been dismissed with the vague and, in our view, naive observation that lenders will simply extend the maturity dates of loans that fail to qualify for refinancing. However, the scale of this problem is virtually unprecedented in commercial real estate, and its impact is likely to dominate the industry for the better part a decade.

At its core, the issue is fairly straightforward: The dramatic weakening in underwriting quality that began in 2005, along with compressing cap rates and ballooning leverage, led to rapidly rising commercial real estate prices. In 2007 the commercial real estate bubble burst, along with most other credit bubbles. Since that time underwriting standards have tightened back to their original levels, and perhaps further, as allowable leverage has plummeted and cap rates have skyrocketed. Purely as a result of the enormous changes in the available financing terms (e.g. lower leverage, higher cap rates and credit spreads), we estimate that commercial real estate prices have declined 25-30% from their 2007 peak. On top of this, the impact of the worst economic recession in decades on property cash flows will likely push them down additional 15-20% over and above the declines due to financing market changes. We argue in this report that, as a result, there are hundreds of billions of dollars, perhaps more than a trillion dollars, of commercial mortgages scheduled to mature over the next decade that are unlikely to qualify for refinancing without substantial equity infusions from the borrowers.

There are, in fact, two very different sources of refinancing problems, both of which are currently at play to varying degrees. The first source reflects the fact that most credit markets are currently either shut or operating at dramatically reduced levels. The problem here is not that maturing loans do not qualify for refinancing, but rather scarcity of credit makes it difficult for all loans to find refinancing, even those that would normally qualify under the new, tighter underwriting standards. Thus, in the current environment, the percentage of maturing loans that are able to refinance has been declining significantly since late 2008, despite the fact that the great majority of maturing loans is from the 1999 and 2000 vintages, have experienced enormous price appreciation and easily qualify for refinancing. As credit markets begin to heal, this source of refinancing problems will diminish.

The second source of refinancing problems, as previously noted, relates to the fact that a vast swath of the commercial mortgages originated during the bubble years (2005-2007) will not qualify for refinancing under the new standards. It is this source of refinancing problems that we focus in this report, and this problem will not go away as credit market rebound.

The focus of this report is on the refinancing problem for commercial mortgages in CMBS transactions. But CMBS is only 25% of the entire commercial real estate debt market, and the same processes that created a vast refinancing problem here were at work, to varying degrees, in other segments of the commercial real estate financing market as well. In particular, we expect that the same type of refinancing problems will be present in both bank

and insurance company loan portfolios, and that they will likely be of a similar magnitude, at least in the case of banks.

The goal of this analysis is to quantify the scale of the refinancing problem in commercial real estate. In particular, by making conservative assumptions, we attempt to determine the minimum size of the problem. The quantitative analysis is carried out only on commercial mortgages in CMBS because only here do we have extremely detailed and complete data about every individual loan, including exact cash flow models. It is then possible, however, to extrapolate the findings on CMBS to the broader commercial real estate debt market.

Our findings with respect to CMBS are as follows:

1. At least two thirds of the loans maturing between 2009 and 2018 ($410 billion) are unlikely to qualify for refinancing at maturity without significant equity infusions from borrowers. For the 2007 vintage, well in excess of 80% of the loans are unlikely to qualify.

2. The aggregate equity deficiency (i.e. the additional amount of equity that borrowers would have to put up in order to qualify to refinance) is at least on the order of $100 billion.

3. Our (conservative) estimate of maturity default-related losses for fixed rate CMBS is $50 billion, 6.5% of the aggregate outstanding balance.

4. We estimate that maturity default-related losses will be at least 4.6% for the 2005 vintage, 5.8% for the 2006 vintage and 12.5% for the 2007 vintage.

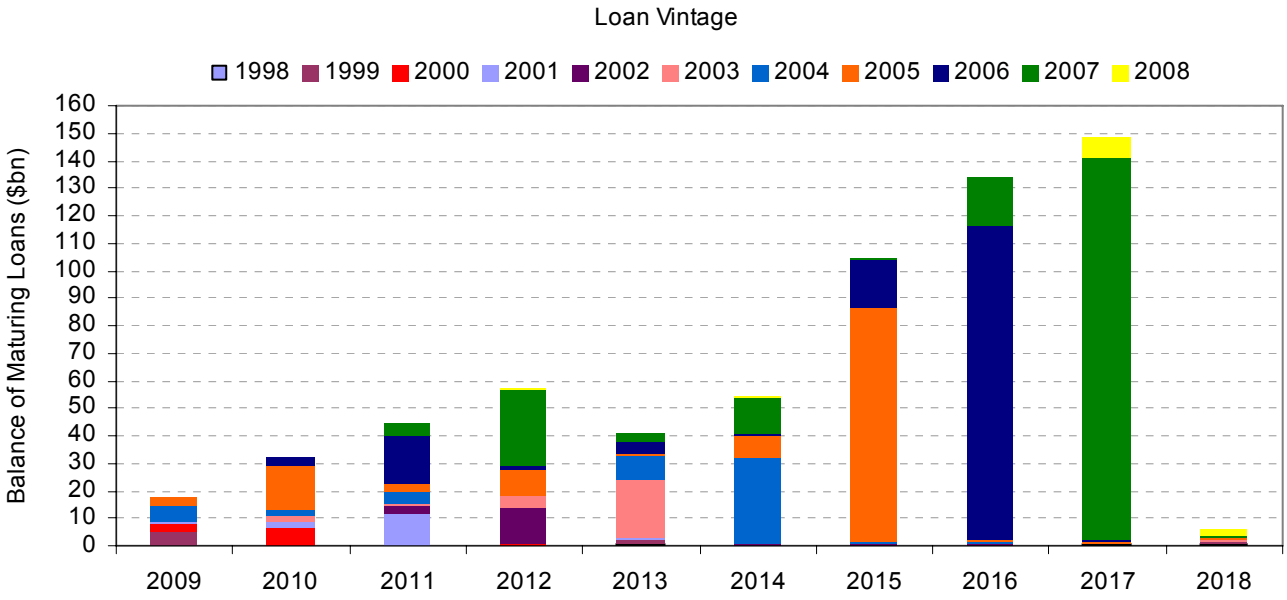
It must be emphasized that this report considers the likely percentage of CMBS loans that would not qualify for refinancing and the associated maturity default-related losses assuming that loans do not default prior to maturity. In reality, a large percentage of these loans are likely to default prior to maturity. Thus, a significant part of what we calculate as maturity default-related losses will actually end up as term default losses. Total losses—the sum of term and maturity-related losses, are likely to be well in excess of the losses shown in this report. We will, in the near future, publish additional results using a combination of our term and maturity default analyses. The purpose of this report, however, was to focus on refinancing and maturity default related issues.

The report is structured as follows: Section II explores the scale of the refinancing problem, including the bank and insurance company components of the commercial real estate financing market. Section III discusses the quantitative analysis upon which our results are based, and presents the underlying assumptions. Section IV examines in some detail the amount of debt that is unlikely to qualify for refinancing without equity infusions from the borrower. In Section VI we provide estimates of the magnitude of the equity deficiency and maturity default-related losses. Average loss estimates are provided for each vintage, and for the 2005, 2006, 2007 and 2008 vintages losses are provided for each CMBS deal. The report concludes with Section VII, which discusses why we do not think that maturity extensions provide a solution to the refinancing problem outlined here.

II. The Magnitude of the Problem

In order to convey the scale of the future refinancing problem, we start by noting that there are approximately $685 billion of non-defeased commercial mortgages in CMBS maturing between now and 2018, of which $640 billion is fixed rate conduit and about $45 billion is floating rate.[1] Of this, approximately $236 billion matures by the end of 2013. Figure 1 provides a breakdown of the maturity profile of fixed rate loans by origination vintage. We include the origination vintage because maturing loans from older vintages clearly pose less of a refinancing problem.

Figure 1: Maturity profile of fixed rate commercial mortgages in CMBS transactions

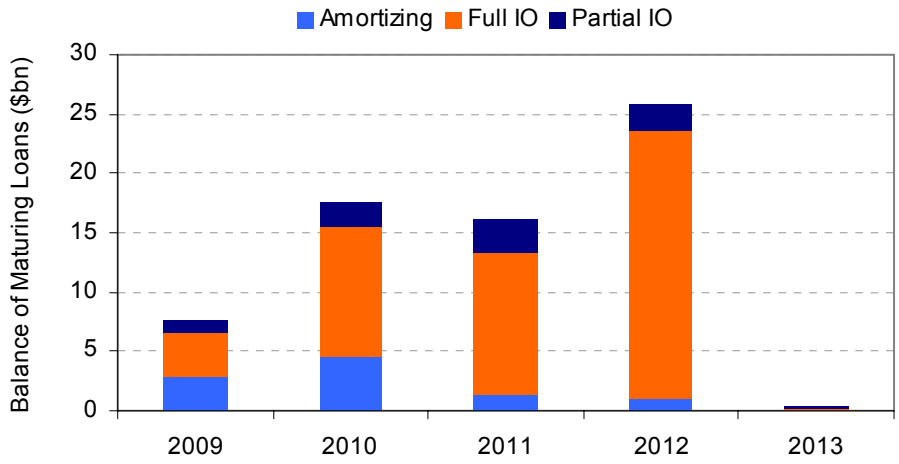


Source: Deutsche Bank, Intex, Trepp

By far the most problematic of the fixed rate CMBS loans are the $67 billion of short-term loans that were originated during the 2005-2007 period and mature in 2010-2013. See Figure 2. These loans were originated at the top of the market, and the subsequent 35-50% price declines will leave a large percentage of them with negative equity just as they approach maturity, making refinancing all but impossible without very significant equity infusions by borrowers, as we will show in the analysis that follows. On top of the shortage of equity issue, these loans also exhibited the worst deterioration in underwriting standards. We argue in a later section that only a small percentage of these loans are likely to be able to qualify for refinancing when they mature.

[1] This excludes whole loans in CRE CDOs, as well as small sectors such as seasoned loan deals.

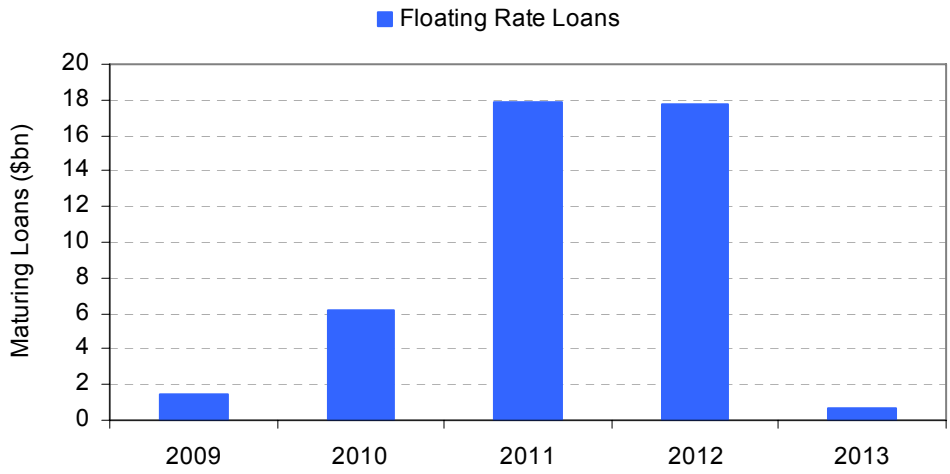
Figure 2: Short term fixed rate CMBS loans maturing through 2013



Source: Deutsche Bank, Intex, Trepp

The $45 billion of floating rate loans (see Figure 3) mentioned above, plus the billions of dollars worth of floating rate whole loans in CRE CDOs that we have not accounted for, are even more problematic than the short-term fixed rate loans. The reason is that these are nearly all short-term loans (five to six year terms) on transitional properties. The properties being transitional, this is where pro forma underwriting was most widespread. In addition, these loans were usually the most highly levered with various types of subordinate debt—B-notes and mezzanine loans. We expect that the vast majority of these loans will not qualify for refinancing without extremely large infusions of borrower equity—imagine the required equity infusion to refinance a loan with an original LTV of 90, where the new minimum LTV is 65 and the value of the securing property has declined by 50%. Needless to say, not many borrowers will be willing to make put this amount of additional equity into an underwater loan.

Figure 3: Maturity profile of floating rate CMBS loans



Source: Deutsche Bank, Intex, Trepp

The quantitative analysis in this report focuses only on commercial mortgages in CMBS transactions because only here do we have sufficient data available. However, CMBS represents only about 25% of the $3.4 trillion commercial real estate market. Banks and life companies, which make up approximately 50% and 10% of the market, respectively, must

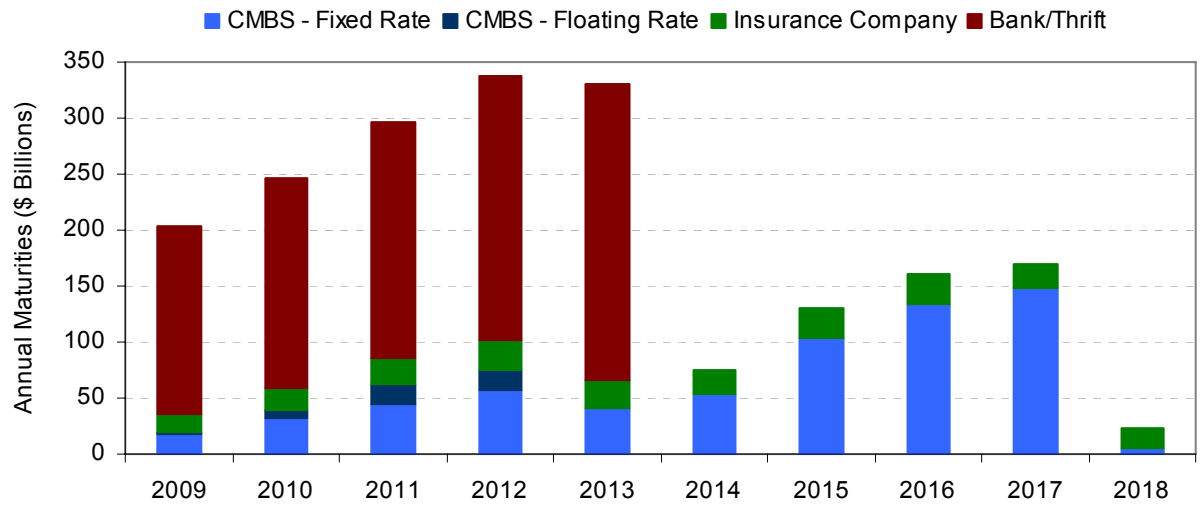
also be considered in the mix. After all, the same combination of deteriorating underwriting standards and excessive price inflation were operating in bank and life company lending (although we do not expect life company direct loans to suffer to same degree as either CMBS or bank loans.)

Banks have $1.068 trillion of core commercial real estate loans on their books, according to the FDIC. This amount does not include $590 billion of (highly combustible) construction loans, $205 billion of multifamily loans or $63 billion of farm loans. We do not know the precise time profile for maturing commercial mortgage loans in bank portfolios. However, bank loans tend to of relatively short term duration to better fit bank liability structures. In order to get a reasonable estimate for the time profile of maturities we assume that all loans have five-year terms and thus mature by 2013. Moreover, this category of bank commercial mortgages has experienced an average annual grown rate of approximately 12% over the past five years. Thus, as a simple approximation, we assume that the amount of bank commercial mortgage maturities each year grow at 12% from 2009 through 2013.

According to the Mortgage Bankers Association, life companies have approximately $222 billion of direct loans maturing through 2018, with annual maturities in the $15-$25 billion range.

The total from these three sources is $1.973 trillion maturing over through 2018, and $1.415 trillion maturing through 2013. See Figures 4 and 5.

Figure 4: Estimated maturity profile of commercial mortgages in CMBS, bank and life company portfolios



Source: Deutsche Bank, Intex, Trepp, Mortgage Bankers Association, Federal Reserve

Figure 5: Annual maturities ($ billion) in CMBS, banks and life companies

Year	CMBS - Fixed Rate	CMBS - Floating Rate	Insurance Company	Bank/Thrift*
2009	17.6	1.5	16.8	168.1
2010	32.2	6.2	19.8	188.3
2011	44.1	17.8	23.1	210.9
2012	57.6	17.7	26.1	236.2
2013	40.9	0.7	24.8	264.6
2014	54.2		20.6	
2015	104.5		25.7	
2016	133.9		27.3	
2017	148.2		21.4	
2018	6.1		16.3	
Total ($bn)	**639.3**	**43.9**	**221.9**	**1,068.2**

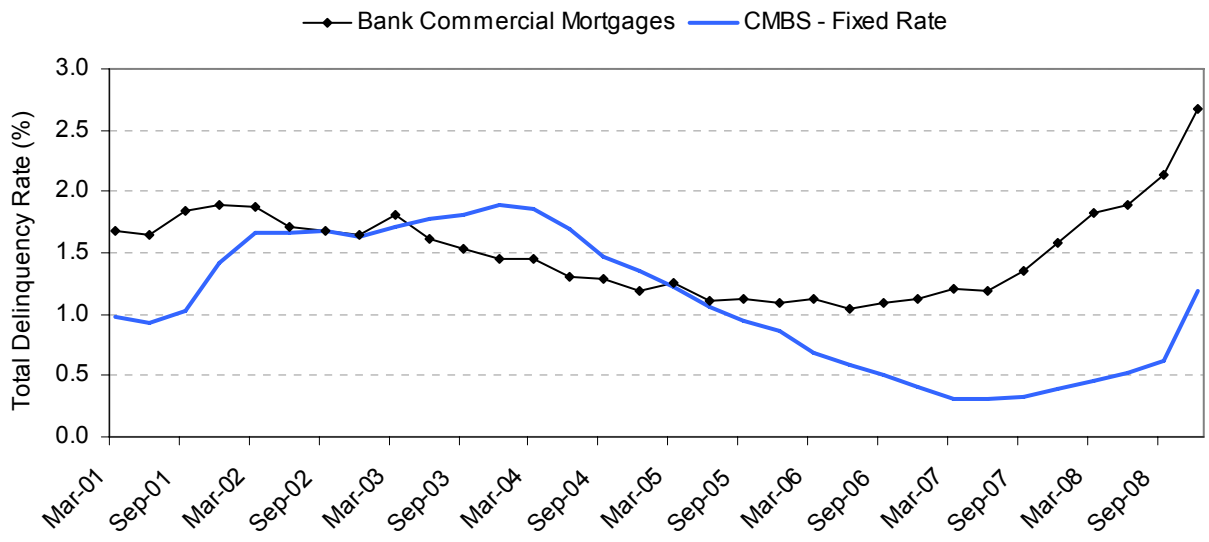
* Maturity timing is estimated

Source: Deutsche Bank, Intex, Trepp, Mortgage Bankers Association, Federal Reserve

When commercial mortgage maturities from bank and life company portfolios are added to the picture, the enormous scale of the problem becomes clear. Without a doubt, the period 2010-2013 will be one of very significant stress in the commercial real estate market. During this period, banks will likely also be taking very large losses not only on residential mortgage portfolios, but also on their construction loan portfolios. According to Foresight Analytics, delinquency rates for construction and land loans stood at 11.4% in 4Q 2008.

In our view, there is also a distinct risk that bank commercial mortgages will under-perform CMBS loans. Figure 6 compares the total delinquency rates for the two universes of loans. On a historical basis, bank commercial mortgages (excluding construction and land loans and multifamily loans) have significantly under-performed CMBS loans. As of Q4 22008, the total delinquency rate for commercial mortgages in bank portfolios bank was more than twice that of fixed rate CMBS. The same is true for multifamily loans as well. As of Q4 2008, multifamily loans in bank portfolios exhibited a total default rate of 4.6%, versus 2.6% for those in CMBS.

Figure 6: Total delinquency rates: fixed rate CMBS versus commercial mortgages in bank portfolios



Source: Deutsche Bank, Intex, Trepp, Foresight Analytics

Our main point is that the amount of commercial mortgages maturing over the next five to seven years that will face formidable refinancing problems could be well in excess of $1 trillion dollars.

Of course, all of this begs the question of precisely where the future financing for commercial real estate will come from. At the moment, the CMBS market is moribund. We speculate

III. Description of the Analysis and Assumptions

The quantitative analysis presented in this report is based entirely on 54,079 currently outstanding and non-defeased fixed rate commercial mortgages in CMBS transactions with an aggregate balance of $601.9 billion.

The analysis begins with the Intex cash flow model for each of the 54,079 loans. Portfolio and Property Research (PPR), an independent commercial real estate research firm, produces 5-year rent, vacancy and NOI projections for each major property segment in the 54 largest commercial real estate markets in the US. For each loan in our sample, we project the NOI of the underlying property five years forward (thorough 2013) using the PPR projections for the appropriate property type and market. After 2013, we assume that NOI returns (linearly) to its peak level at the end of 2007 by 2018. This NOI projection is then run through the Intex cash flow model for the loan until its maturity date. At this point, the property's approximate value is calculated by applying the appropriate cap rate to the property's projected NOI. By making specific assumptions about maximum LTV, minimum DSCR and the future cost of financing (i.e. mortgage rates), we are able to estimate whether the loan would qualify for refinancing at the new tighter underwriting standards, the amount, if any, of the equity deficiency (i.e. the amount of new equity the borrower would need to put into the loan in order to refinance) and an estimate of the maturity default-related loss.

At each stage of the analysis, we have attempted to make assumptions that are reasonable, but conservative in the sense of giving rise to the least stress or the lowest losses. The exception is the NOI scenarios, which we simply take from PPR.

The PPR NOI scenarios are summarized at an aggregated level in Figure 7 by taking, for each property segment, the weighted average of NOI projections across markets, where the weights represent the size of the property sector in that market.

Scenario 1 is the current PPR severe recession scenario. Scenario 2 is the previous PPR severe recession scenario, which now looks relatively mild. Scenario 1 clearly entails extreme cash flow stress for properties. In our view, the magnitudes of these projections are reasonable.

Figure 7: Summary of aggregated NOI growth scenarios

NOI Growth Assumptions

	PPR Peak-Trough NOI % Change	
Property Type	**NOI Scenario 1**	**NOI Scenario 2**
Industrial	-16.3	-8.5
Multifamily	-15.0	-5.4
Office	-32.6	-13.4
Retail	-26.6	-19.7
Hotel *	-20.0	-20.0

* Hotel projection is not based on PPR

Source: Deutsche Bank, PPR

Cap rates are an important component of the analysis and the results are sensitive to the assumed levels. In order to produce conservative estimates, we have chosen to use what are in our view conservative cap rate assumptions. These are shown in Figure 8.

Figure 8: Cap rate assumptions

Cap Rate Assumptions

Property Type	Current	24 Mnths	60 Months	120 Mnths	240 Mnths
Industrial	8.5	8.5	8.5	8.0	8.0
Multifamily	8.0	8.0	8.0	8.0	8.0
Office	8.5	8.5	8.5	8.0	8.0
Retail	8.5	8.5	8.5	8.0	8.0
Hotel	9.5	9.5	9.5	9.0	9.0

Source: Deutsche Bank

We believe that in many cases actual cap rates are currently 100-200bp, or more, higher

The results of or analysis are contained in the next two sections. We believe that these results are conservative (in the sense that the proportion of loans that will not qualify for refinancing without additional borrower equity infusions, as well as maturity default-related losses, will both be higher than our estimates) for the following reasons:

1. Our analysis does not take account of subordinate debt. However, large conduit loans originated from 2005 through 2007 often had large amounts of subordinate debt either in the form of B-notes, mezzanine loans or both. While we do have fairly complete data on B-notes, we have very sketchy information on mezzanine debt, at least in Intex. The inclusion of subordinate debt would likely significantly increase the equity deficiency in the 2005-2007 vintage loans. On the other hand, the impact the mezzanine loan component may not be as relevant as the B-note component since they are not secured by the property directly and only really determines, ultimately, who the borrower is. Apart from more recently originated loans on larger assets, a significant percentage of smaller seasoned conduit loans also have some amount of subordinate debt, often 2nd lien mortgages. This clearly increases the equity deficiency beyond our estimates. On the other had, subordinate debt is not as relevant for loss estimates since, by definition, it is subordinate to the first mortgage.

2. As already discussed, our cap rates assumptions are conservative.

3. As will be discussed in the next two sections, our underwriting assumptions--maximum LTVs (70%), minimum DSCRs (1.3x) and future mortgage rates (8%)--are conservative.

IV. Estimating the Amount of Non-Refinanceable Loans

To be clear, by not qualifying for refinancing, we mean that when the existing loan matures the borrower will not be able to qualify for a new loan with sufficient proceeds to payoff the existing loan. In particular, the borrower will need to put additional equity to payoff the existing loan.

The amount of refinanceable loans is particularly important because, in our view, commercial real estate borrowers will, for the most part, either be unable or unwilling (or both) to put additional equity into these properties. Instead, borrowers will be faced either with negotiating for maturity extensions from their lenders or walking away from the property. As we argue in the final section, we do not believe that loan extensions offer a way out of this problem and expect that both routes will ultimately lead to losses.

This section provides a variety of results meant to shed light on the nature and scope of the refinancing problem. In order to qualify to refinance an existing loan, the property must satisfy three criteria:

1. The new loan balance must be at least as large as the existing loan balance.

2. The LTV of the loan must be no greater than 70 (current maximum LTVs are between 60 and 65).

3. The DSCR, based on a 10-year fixed rate loan with a 25-year amortization schedule and an 8% mortgage rate, must be no less than 1.3x.

We provide results over two different horizons, the shorter-term horizon consisting of loans maturing between 2009 and 2012 and the full term horizon consisting of all loans. The reason we look at the shorter-term results separately is that our projections have more accuracy over this shorter period. The further out in time we go, the less sure we are that the actual future environment will match up to our projections.

We begin with the shorter-term results. Unless otherwise noted, all results correspond to the more severe NOI Scenario 1.

Figure 9 indicates that of all fixed rate CMBS loans maturing during the 2009-2012 period, approximately 67% (on a balance basis) would not qualify for refinancing.

Figure 9: Estimated percentage of loans that do not qualify for refinancing: NOI Scenario 1

	Loans Maturing 2009 - 2012					
	Refinancing Requirement: LTV < 70 & DCSR > 1.3					
Property Type	# Loans	Balance ($BB)	Loans Not Qualifying (#)	Loans Not Qualifying ($BB)	% Not Qualifying (Loan Count)	% Not Qualifying (Balance)
Hotel	475	7.3	182	4.1	38.3	55.5
Industrial	1,189	5.8	330	2.2	27.8	37.9
Multifamily	3,793	24.4	2,220	18.9	58.5	77.3
Office	2,629	40.9	1,433	30.8	54.5	75.3
Retail	4,156	44.6	1,727	24.6	41.6	55.1
Multi Property	672	29.6	339	21.1	50.4	71.3
Other	1,545	12.0	639	8.7	41.4	71.9
Aggregate	**14,459**	**164.7**	**6,870**	**110.3**	**47.5**	**66.9**

Source: Deutsche Bank

Figure 10 provides the results from the same analysis as the previous case, except that only the LTV constraint is applied for qualifying. Here the percentage that does not qualify drops to 56%.

Figure 10: Estimated percentage of loans that do not qualify for refinancing: NOI Scenario 1

	Loans Maturing 2009 - 2012					
	Refinancing Requirement: LTV < 70					
Property Type	# Loans	Balance ($BB)	Loans Not Qualifying (#)	Loans Not Qualifying ($BB)	% Not Qualifying (Loan Count)	% Not Qualifying (Balance)
Hotel	475	7.3	168	3.9	35.4	52.7
Industrial	1,189	5.8	286	2.0	24.1	34.4
Multifamily	3,793	24.4	1,958	17.3	51.6	70.8
Office	2,629	40.9	1,357	27.1	51.6	66.3
Retail	4,156	44.6	1,655	22.4	39.8	50.3
Multi Property	672	29.6	306	15.0	45.5	50.5
Other	1,545	12.0	573	4.0	37.1	33.0
Aggregate	**14,459**	**164.7**	**6,303**	**91.6**	**43.6**	**55.6**

Source: Deutsche Bank

Figure 11 again applies the same analysis, except that here we only apply the DSCR constraint for qualifying. The result is that 66% do not qualify for refinancing.

Figure 11: Estimated percentage of loans that do not qualify for refinancing: NOI Scenario 1

	Loans Maturing 2009 - 2012					
	Refinancing Requirement: DSCR > 1.3					
Property Type	# Loans	Balance ($BB)	# Loans Not Qualifying	Balance Not Qualifying ($BB)	% Not Qualifying (Loan Count)	% Not Qualifying (Balance)
Hotel	475	7.3	155	3.7	32.6	50.3
Industrial	1,189	5.8	323	2.1	27.2	36.9
Multifamily	3,793	24.4	2,220	18.9	58.5	77.3
Office	2,629	40.9	1,407	30.6	53.5	74.8
Retail	4,156	44.6	1,680	24.2	40.4	54.3
Multi Property	672	29.6	336	21.1	50.0	71.1
Other	1,545	12.0	548	8.2	35.5	68.6
Aggregate	**14,459**	**164.7**	**6,669**	**108.9**	**46.1**	**66.1**

Source: Deutsche Bank

From the preceding three sets of results, we conclude that in general both valuation (via the LTV constraint) and cash flow (via the DSCR constraint) are binding constraints, although cash flow appears to be slightly more significant of a constraint.

Next, Figure 12 indicates that, as would be expected, the situation is much worse for the 2007 vintage loans maturing between 2009 and 2012. Here nearly 80% do not qualify.

Figure 12: Estimated percentage of loans that do not qualify for refinancing: NOI Scenario 1

	2007 Vintage Loans Maturing 2009 - 2012					
	Refinancing Requirement: LTV < 70 & DSCR > 1.3					
Property Type	# Loans	Balance ($BB)	# Loans Not Qualifying	Balance Not Qualifying ($BB)	% Not Qualifying (Loan Count)	% Not Qualifying (Balance)
Hotel	79	2.7	51	2.1	64.6	77.7
Industrial	53	0.6	39	0.4	73.6	73.0
Multifamily	197	3.6	179	3.4	90.9	94.5
Office	197	7.6	172	6.7	87.3	88.0
Retail	118	2.0	96	1.9	81.4	94.6
Multi Property	81	7.9	66	6.9	81.5	87.4
Other	135	3.9	91	1.1	67.4	28.3
Aggregate	**860**	**28.2**	**694**	**22.5**	**80.7**	**79.6**

Source: Deutsche Bank

Figure 13 indicates that for all loans maturing in during 2009 and thereafter, effectively all outstanding loans, more than 68% ($411 billion out of $602 billion) do not qualify for refinancing.

Figure 13: Estimated percentage of loans that do not qualify for refinancing: NOI Scenario 1

	All Loans Maturing 2009 and Thereafter					
	Refinancing Requirement: LTV < 70 & DCSR>1.3					
Property Type	# Loans	Balance ($BB)	Loans Not Qualifying (#)	Loans Not Qualifying ($BB)	% Not Qualifying (Loan Count)	% Not Qualifying (Balance)
Hotel	2,756	34.1	594	12.7	21.6	37.1
Industrial	3,666	20.2	1,292	9.7	35.2	48.2
Multifamily	11,880	81.3	7,118	62.1	59.9	76.4
Office	9,192	162.1	5,515	122.7	60.0	75.7
Retail	18,121	168.6	10,805	118.8	59.6	70.5
Multi Property	2,541	94.6	1,236	58.1	48.6	61.4
Other	5,923	41.0	2,651	26.7	44.8	65.2
Aggregate	**54,079**	**601.9**	**29,211**	**410.9**	**54.0**	**68.3**

Source: Deutsche Bank

For the 2007 vintage loans as a whole, approximately 72% do not qualify under our scenario analysis. See Figure 14.

Figure 14: Estimated percentage of loans that do not qualify for refinancing: NOI Scenario 1

	2007 Vintage Loans Maturing 2009 and Thereafter					
	Refinancing Requirement: LTV < 70					
Property Type	# Loans	Balance ($BB)	Loans Not Qualifying (#)	Loans Not Qualifying ($BB)	% Not Qualifying (Loan Count)	% Not Qualifying (Balance)
Hotel	814	13.1	202	5.8	24.8	44.7
Industrial	732	5.5	358	3.3	48.9	59.3
Multifamily	1,674	19.6	1,158	16.1	69.2	82.4
Office	1,965	47.7	1,256	37.7	63.9	79.0
Retail	3,567	38.2	2,268	30.2	63.6	79.2
Multi Property	629	31.4	324	20.6	51.5	65.6
Other	1,231	12.5	722	7.2	58.7	57.6
Aggregate	**10,612**	**168.0**	**6,288**	**121.0**	**59.3**	**72.0**

Source: Deutsche Bank

Finally, Figures 15 and 16 report the results under the less stressful NOI Scenario 2. As expected, the percentage of loans failing to qualify declines. However, it remains in excess of 50%, enough to have extraordinarily stressful consequences.

Figure 15: Estimated percentage of loans that do not qualify for refinancing: NOI Scenario 2

	Loans Maturing 2009 - 2012					
	Refinancing Requirement: LTV < 70 & DCSR>1.3					
Property Type	# Loans	Balance ($BB)	Loans Not Qualifying (#)	Loans Not Qualifying ($BB)	% Not Qualifying (Loan Count)	% Not Qualifying (Balance)
Hotel	475	7.3	142	3.5	29.9	47.4
Industrial	1189	5.8	266	1.9	22.4	31.9
Multifamily	3793	24.4	1791	16.3	47.2	66.8
Office	2629	40.9	1086	23.5	41.3	57.5
Retail	4156	44.6	1439	20.5	34.6	46.0
Multi Property	672	29.6	300	14.9	44.6	50.1
Other	1545	12.0	482	3.6	31.2	29.6
Aggregate	**14,459**	**164.7**	**5,506**	**84.1**	**38.1**	**51.0**

Source: Deutsche Bank

Figure 16: Estimated percentage of loans that do not qualify for refinancing: NOI Scenario 2

	Loans Maturing 2009 - 2018					
	Refinancing Requirement: LTV < 70					
Property Type	# Loans	Balance ($BB)	Loans Not Qualifying (#)	Loans Not Qualifying ($BB)	% Not Qualifying (Loan Count)	% Not Qualifying (Balance)
Hotel	2,756	34.1	410	9.6	14.9	28.2
Industrial	3,666	20.2	995	7.9	27.1	39.2
Multifamily	11,880	81.3	5571	52.4	46.9	64.4
Office	9,192	162.1	4015	97.7	43.7	60.2
Retail	18,121	168.6	9100	104.5	50.2	62.0
Multi Property	2,541	94.6	1017	43.8	40.0	46.3
Other	5,923	41.0	2259	17.9	38.1	43.7
Aggregate	**54,079**	**601.9**	**23,367**	**333.7**	**43.2**	**55.4**

Source: Deutsche Bank

V. Equity Deficiency and Losses from Maturity Defaults

This section presents our estimates on both equity deficiency and maturity default-related losses. The equity deficiency in a given loan represents the amount of additional equity the borrower would have to inject in order for the loan to meet the 70 LTV hurdle. Losses estimates are calculated in two alternative ways. In the first method—Scenario 1—we assume that for any loan with less than a 100 LTV, the borrower puts in the additional equity, and there is no maturity default. For loans with greater than 100 LTV, the loss is calculated by subtracting 90% of the property value from the maturing loan balance. In the second method—Scenario 2—we assume that the borrower does not put up additional equity for loans having less than 100 LTV. The difference between these two approaches is that loans with less than 100 LTV cannot have losses under Scenario 1, while they can under Scenario 2. Thus, Scenario 1 is more conservative in the sense of producing lower losses.

In both calculations we use 90% of the estimated property value in order to account for:

1. The (quite significant) transactions costs associated with foreclosing upon and liquidating property, and

2. The fact that the liquidations will be taking place in an extremely stressed commercial real estate environment.

We believe that taking 90% of the property value is extremely conservative in this situation.

Figure 17 presents our basic results under NOI Scenario 1. The results are given by CMBS deal vintage. We present, first, maturity default-related loss estimates for loans maturing between 2009 and 2012 and second from all loans.

Figure 17: Estimated equity deficiency and maturity default-related loss rates: NOI Scenario 1

				Scenario 1: Equity Infusions for LTV < 100		Scenario 2: Zero Equity Infusions	
Vintage	# of Deals	Aggregate Balance ($BB)	Avg Equity Deficiency Rate	Avg Loss Rate Through 2012	Avg Loss Rate Lifetime	Avg Loss Rate Through 2012	Avg Loss Rate Lifetime
2000	32	19.4	4.0	1.5	1.5	2.3	2.3
2001	38	27.1	5.6	1.8	1.8	2.8	2.8
2002	38	27.5	6.4	2.1	2.1	2.7	2.7
2003	47	42.2	7.4	2.2	2.3	2.8	2.9
2004	60	64.8	9.0	1.1	2.8	1.3	3.3
2005	63	130.8	13.5	1.8	4.6	2.0	5.2
2006	64	159.6	15.5	1.9	5.8	2.2	6.5
2007	61	190.0	23.7	4.0	12.5	4.1	13.2
2008	8	10.7	12.5	3.0	5.8	3.0	6.1
Aggregate	**411**	**672.0**	**15.1**	**2.4**	**6.5**	**2.7**	**7.2**

Source: Deutsche Bank

Under the more conservative approach, estimated losses are nearly $44 billion, or 6.5% of the total outstanding balance. Under the alternative method, estimated losses are almost $49 billion, or 7.2%. By far the worst vintage is 2007, not surprising. What is surprising is how much worse the 2007 vintage is than either the 2005 or 2006 vintages.

Also interesting is the magnitude of the average equity deficiency. For the 2005-2008 vintages, the average equity deficiency ranges from 12% to nearly 24%. And this excludes subordinates debt!

The results are presented again in Figure 18 under the milder NOI Scenario 2.

Figure 18: Estimated equity deficiency and maturity default-related loss rates: NOI Scenario 1

				Scenario 1: Equity Infusions for LTV < 100		Scenario 2: Zero Equity Infusions	
Vintage	# of Deals	Aggregate Balance ($BB)	Avg Equity Deficiency Rate	Avg Loss Rate Through 2012	Avg Loss Rate Lifetime	Avg Loss Rate Through 2012	Avg Loss Rate Lifetime
2000	32	19.4	3.8	1.4	1.4	2.2	2.2
2001	38	27.1	4.7	1.5	1.5	2.5	2.5
2002	38	27.5	4.5	1.6	1.6	2.1	2.1
2003	47	42.2	5.1	1.5	1.6	2.1	2.1
2004	60	64.8	7.0	0.9	2.0	1.1	2.5
2005	63	130.8	11.2	1.3	3.4	1.5	3.9
2006	64	159.6	13.4	1.4	4.5	1.6	5.2
2007	61	190.0	22.2	3.4	11.2	3.5	11.8
2008	8	10.7	11.3	2.1	4.6	2.2	5.1
Aggregate	**411**	**672.0**	**13.3**	**1.9**	**5.4**	**2.2**	**6.1**

Source: Deutsche Bank

Finally, for each 2005-2008 vintage fixed rate conduit deal, we present both estimated average equity deficiency and losses. See Figures 19-22.

Figure 19: Estimated equity deficiency and losses for 2005 Vintage: NOI Scenario 1

		Scenario 1: Equity Infusions for LTV < 100		Scenario 2: Zero Equity Infusions	
Deal Name	Equity Deficiency	Loss % (Through 2012)	Loss % (Lifetime)	Loss % (Through 2012)	Loss % (Lifetime)
BACM0501	14.98	3.20	5.04	3.30	5.24
BACM0502	21.50	5.29	10.07	5.29	10.45
BACM0503	14.76	3.33	4.61	4.18	5.52
BACM0504	13.29	0.86	3.89	0.96	4.22
BACM0505	15.57	5.18	7.71	5.18	7.81
BACM0506	7.50	0.30	2.19	0.30	2.33
BSC05P10	13.79	0.85	6.44	0.94	6.56
BSC05PW7	11.79	1.58	3.81	1.66	4.22
BSC05PW8	7.62	0.30	2.56	0.30	2.76
BSC05PW9	14.83	3.72	5.50	4.17	6.19
BSC05T18	3.87	0.00	0.47	0.01	0.52
BSC05T20	6.52	0.10	0.65	0.32	1.41
CD05CDC1	14.39	1.02	3.56	1.18	4.06
COM05C06	14.03	0.96	4.44	1.19	4.76
COM05LP5	10.53	1.70	3.09	2.04	3.77
CSF05C01	11.14	0.70	2.55	0.85	3.38
CSF05C02	17.14	3.43	5.77	3.52	7.74
CSF05C03	16.47	1.36	6.08	2.26	7.60
CSF05C04	9.00	0.02	1.54	0.03	2.26
CSF05C05	10.83	0.76	2.52	0.78	3.00
CSF05C06	15.22	0.81	6.05	1.33	6.93
CTG05C03	14.45	0.85	5.12	1.08	5.94
CTG05EMG	2.84	1.04	1.04	1.51	1.51
GCC05GG3	14.39	2.57	4.07	2.77	4.89
GCC05GG5	18.57	3.60	5.25	4.15	6.91
GECC05C1	11.99	1.96	3.11	2.06	3.40
GECC05C2	16.84	6.78	8.44	6.86	8.79
GECC05C3	13.99	2.05	4.73	2.16	5.11
GECC05C4	12.83	0.08	3.38	0.42	4.04
GMAC05C1	13.28	1.14	2.98	1.89	3.97
GSM205G4	16.13	1.98	5.75	2.11	6.66
JPC05C11	12.18	2.31	3.62	2.56	4.33
JPC05C12	12.12	2.39	4.19	2.52	4.45
JPC05C13	17.54	3.39	7.41	3.48	7.68
JPC05LD1	12.04	2.32	4.03	2.56	4.36
JPC05LD2	15.56	3.05	5.85	3.19	6.34
JPC05LD3	15.54	2.49	5.47	2.81	6.26
JPC05LD4	14.65	2.37	4.89	2.42	5.19
JPC05LD5	10.73	0.84	2.76	1.36	3.45
LBUB05C1	11.87	0.89	2.58	1.21	3.36
LBUB05C2	15.43	0.59	3.59	1.27	4.74
LBUB05C3	11.82	1.91	4.09	1.95	4.37
LBUB05C5	21.58	0.77	12.51	0.87	12.63
LBUB05C7	13.70	2.09	7.48	2.24	7.84
MLT05CK1	10.38	0.33	1.69	0.41	2.20
MLT05CP1	12.86	2.45	5.13	2.46	5.25
MLT05LC1	10.45	0.56	1.75	0.57	1.97
MLT05MC1	14.70	1.71	5.42	2.05	6.46
MLT05MK2	7.62	0.35	2.01	0.35	2.16
MSC05HQ5	12.48	0.48	3.24	1.45	4.93
MSC05HQ6	21.78	0.91	9.30	1.57	10.57
MSC05HQ7	12.65	0.17	4.43	0.24	4.87
MSC05I10	18.05	7.73	11.32	7.73	11.71
MSC05IQ9	14.30	1.79	4.34	2.16	5.67
MSC05T17	5.31	0.07	0.18	0.07	0.21
MSC05T19	8.34	0.41	1.45	0.47	2.30
WBC05C16	8.92	0.29	2.78	0.38	3.12
WBC05C17	12.04	0.39	3.50	0.69	4.04
WBC05C18	14.81	2.29	4.56	2.51	5.12
WBC05C19	18.10	4.52	7.70	4.70	8.00
WBC05C20	12.51	2.45	3.66	2.57	4.00
WBC05C21	12.06	0.26	2.96	0.31	3.30
WBC05C22	11.85	0.21	2.69	0.22	3.27

Source: Deutsche Bank

Figure 20: Estimated equity deficiency and losses for 2006 Vintage: NOI Scenario 1

		Scenario 1: Equity Infusions for LTV < 100		Scenario 2: Zero Equity Infusions	
Deal Name	Equity Deficiency	Loss % (Through 2012)	Loss % (Lifetime)	Loss % (Through 2012)	Loss % (Lifetime)
BACM0601	9.72	0.99	1.84	2.48	3.40
BACM0602	14.17	0.96	3.49	1.12	4.44
BACM0603	16.63	0.97	5.12	0.97	5.84
BACM0604	13.57	2.88	4.54	3.04	5.20
BACM0605	11.37	0.41	2.70	0.65	3.17
BACM0606	25.45	13.11	13.64	13.11	14.23
BSC06P11	9.64	0.00	0.74	0.00	1.61
BSC06P12	8.61	0.28	2.27	0.28	2.49
BSC06P13	11.10	1.11	3.49	1.12	3.79
BSC06P14	13.01	2.71	5.58	2.73	5.76
BSC06T22	4.97	0.13	1.60	0.20	1.80
BSC06T24	11.32	1.36	2.38	1.49	2.96
CD06CD2	15.29	2.92	5.40	2.94	5.67
CD06CD3	11.71	0.24	3.84	0.26	4.34
COB06C01	16.45	3.77	7.41	3.78	8.14
COM06C07	9.80	0.21	2.53	0.22	2.89
COM06C08	23.46	3.07	8.82	9.59	15.43
CSM06C01	11.97	2.41	3.99	2.41	4.89
CSM06C02	14.92	0.29	3.09	0.29	4.12
CSM06C03	20.80	0.05	8.79	0.07	9.91
CSM06C04	21.24	0.63	9.46	0.63	10.10
CSM06C05	16.61	1.34	8.29	1.39	8.86
CSM06K01	7.43	3.13	3.31	3.16	3.34
CTG06C04	10.78	1.65	3.14	1.67	3.46
CTG06C05	13.47	1.09	5.13	1.18	5.44
GCC06GG7	20.21	2.67	7.30	2.69	8.24
GECC06C1	10.74	0.00	2.84	0.02	2.96
GMAC06C1	12.47	0.69	3.83	0.69	4.11
GSM206G6	17.86	4.00	7.41	4.32	7.88
GSM206G8	23.31	2.56	8.75	2.75	9.44
JPC06C14	12.13	0.49	2.95	0.76	3.43
JPC06C15	17.17	0.57	5.81	0.57	6.01
JPC06C16	9.01	0.00	2.85	0.00	3.00
JPC06C17	17.32	0.81	5.49	0.87	6.26
JPC06LD6	10.27	0.71	2.26	0.84	3.68
JPC06LD7	13.30	0.52	3.49	0.68	4.26
JPC06LD8	19.00	0.42	7.25	0.44	9.41
JPC06LD9	22.97	3.91	12.35	4.18	12.86
LBUB06C1	10.28	1.37	3.61	1.75	4.00
LBUB06C3	13.34	5.02	6.82	5.02	6.91
LBUB06C4	19.87	1.33	10.02	1.33	10.10
LBUB06C6	16.46	2.28	5.63	2.42	6.09
LBUB06C7	18.73	3.21	5.37	3.48	6.33
MA111PA2	0.00	0.00	0.00	0.00	0.00
MLCF0601	9.23	0.26	2.20	0.29	2.37
MLCF0602	6.82	0.22	1.61	0.23	1.91
MLCF0603	9.67	0.16	1.96	0.65	2.80
MLCF0604	23.44	4.12	9.34	4.23	9.89
MLT06C01	14.61	0.32	5.52	0.55	6.26
MLT06C02	9.55	0.04	1.64	0.04	2.27
MSC06H10	13.18	0.11	5.07	0.11	5.16
MSC06HQ8	15.96	0.12	6.25	0.32	7.14
MSC06HQ9	16.85	2.87	6.79	2.87	6.85
MSC06I11	4.00	0.00	0.50	0.00	0.63
MSC06I12	18.52	7.15	10.33	7.42	11.36
MSC06T21	8.02	0.35	1.76	0.44	1.96
MSC06T23	8.72	0.16	0.98	0.33	1.69
WBC06C23	14.86	0.16	5.64	0.18	6.42
WBC06C24	13.60	0.00	4.73	0.00	4.91
WBC06C25	9.01	0.42	1.20	0.43	1.62
WBC06C26	20.18	7.88	11.85	7.88	12.16
WBC06C27	18.21	2.58	7.35	2.70	8.07
WBC06C28	23.70	3.69	10.24	3.73	11.55
WBC06C29	21.16	1.59	7.45	2.08	9.01

Source: Deutsche Bank

Figure 21: Estimated equity deficiency and losses for 2007 Vintage: NOI Scenario 1

		Scenario 1: Equity Infusions for LTV < 100		Scenario 2: Zero Equity Infusions	
Deal Name	Equity Deficiency	Loss % (Through 2012)	Loss % (Lifetime)	Loss % (Through 2012)	Loss % (Lifetime)
BACM0701	22.59	9.00	12.08	9.00	12.81
BACM0702	31.20	13.87	17.69	13.88	18.13
BACM0703	32.92	7.31	18.45	7.49	19.30
BACM0704	20.49	0.72	8.56	0.76	8.91
BACM0705	20.33	1.37	9.12	1.44	9.98
BSC07P15	18.00	0.87	7.15	0.87	7.68
BSC07P16	15.24	3.91	6.93	4.16	7.24
BSC07P17	17.14	1.23	5.44	1.36	6.15
BSC07P18	10.98	0.38	1.88	0.40	2.46
BSC07T26	9.70	0.88	3.28	1.00	3.70
BSC07T28	11.15	0.26	2.19	0.36	2.76
CD07CD4	22.35	4.96	11.94	4.96	12.49
CD07CD5	14.05	2.75	5.25	2.78	5.84
COB07C02	16.59	0.81	6.03	0.81	6.23
COB07C03	28.41	1.60	16.27	1.66	16.74
COM07C09	12.77	0.87	3.62	1.01	4.30
CSM07C01	23.51	0.93	13.73	1.01	14.23
CSM07C02	32.30	1.46	19.36	1.54	19.69
CSM07C03	24.93	3.69	13.04	3.79	13.76
CSM07C04	31.61	6.63	21.02	6.65	21.38
CSM07C05	26.26	5.16	15.12	5.19	15.64
CTG07C06	21.46	0.89	6.56	0.90	9.95
GCC07G11	26.92	7.38	15.31	7.38	15.78
GCC07GG9	26.51	4.87	11.64	4.94	12.98
GECC07C1	30.27	8.08	18.15	8.14	18.78
GS207G10	37.58	2.90	23.72	3.02	24.44
JPC07C01	9.42	0.15	2.80	0.28	2.96
JPC07C18	14.55	0.24	4.81	0.25	5.93
JPC07C19	19.83	0.68	8.41	1.35	9.74
JPC07C20	12.63	0.77	4.36	0.77	4.64
JPC07L10	27.78	5.77	15.85	5.87	16.25
JPC07L11	26.58	6.33	13.80	6.39	14.11
JPC07L12	24.79	4.85	11.78	5.13	12.50
LBC07C03	27.14	8.52	17.42	8.60	17.67
LBUB07C1	30.63	3.80	16.31	3.82	17.48
LBUB07C2	20.59	1.56	9.84	1.60	10.40
LBUB07C6	19.70	5.97	10.05	5.97	10.50
LBUB07C7	17.34	2.29	8.12	2.29	8.36
MLCF0705	25.11	0.92	13.73	1.02	14.36
MLCF0706	21.50	3.52	8.18	3.81	9.06
MLCF0707	21.27	3.74	10.33	3.81	10.80
MLCF0708	11.43	0.36	3.87	0.36	4.27
MLCF0709	16.30	0.74	6.78	0.78	7.28
MLT07C01	20.45	4.70	8.71	4.71	9.35
MSC07H11	26.19	6.19	14.64	6.20	14.79
MSC07H12	38.35	17.46	25.48	17.47	25.86
MSC07H13	22.08	4.93	10.32	4.93	11.10
MSC07I13	20.75	4.01	12.49	4.01	12.74
MSC07I14	23.79	7.10	12.29	7.10	12.64
MSC07I15	17.59	1.61	4.35	2.19	5.33
MSC07I16	12.71	1.96	4.04	1.96	4.25
MSC07T25	13.47	0.09	5.16	0.09	5.70
MSC07T27	12.74	0.75	2.85	0.85	3.44
PFCR07PL	0.00	0.00	0.00	0.00	0.00
SVG07C01	20.25	5.91	7.82	7.03	9.07
UCB07001	1.93	0.56	0.68	0.60	0.74
WBC07C30	36.21	6.44	25.76	6.49	25.98
WBC07C31	30.64	3.41	19.21	3.48	19.43
WBC07C32	33.21	7.80	20.03	7.80	20.41
WBC07C33	31.82	5.23	23.46	5.24	23.72
WBC07C34	16.12	2.95	9.64	2.95	10.10

Source: Deutsche Bank

Figure 22: Estimated equity deficiency and losses for 2008 Vintage: NOI Scenario 1

		Scenario 1: Equity Infusions for LTV < 100		Scenario 2: Zero Equity Infusions	
Deal Name	Equity Deficiency	Loss % (Through 2012)	Loss % (Lifetime)	Loss % (Through 2012)	Loss % (Lifetime)
BACM0801	12.40	0.00	7.11	0.04	7.37
CLT08LS1	14.57	0.54	5.28	0.58	6.24
CSM08C01	26.62	13.11	16.97	13.11	17.68
CTG08C07	15.57	5.58	7.44	5.58	7.74
JPC08C02	7.08	2.55	2.73	2.55	2.74
LBUB08C1	4.86	0.00	1.61	0.00	1.62
MLT08C01	10.23	2.92	4.12	2.96	4.22
MSC08T29	7.16	0.29	2.28	0.29	2.32

Source: Deutsche Bank

VI. Concluding Remarks

In this report we have argued that a very large proportion of outstanding commercial mortgages are likely to be unable to refinance at maturity over the coming five to ten years. We have provided what we believe are conservative estimates of the magnitude of the equity deficiency as well as maturity default-related losses.

To date, many market participants have dismissed the seriousness of the future refinancing issue, believing that lenders will simply agree to maturity extensions for loans that fail to qualify. Such an approach might prove fruitful were the percentage of loans failing to qualify relatively small, say five percent of the total. However, our analysis suggests that that percentage is likely to be 60-70% or more.

The underlying premise of a maturity extension as a solution to a loan's qualifying problem is that during the extension period the lender is either able to increase the amortization on the loan by some means (e.g. increasing the interest rate and using the extra cash flow to accelerate the pay down of the loan) or able to achieve value growth sufficient to allow the loan to qualify by the end of the extension period. With respect to the first possibility, we have seen that the equity deficiency for many loans is enormous, far too large, in fact, to be tackled by accelerating the amortization over a moderate period of time. With respect to value growth, we think that with hundreds of billions of dollars of distressed mortgages building up over time via maturity extensions, the likelihood of significant property price appreciation is remote. After all, hundreds of billions of dollars of extended mortgages represent potentially hundreds of billions of dollars of distressed real estate ready to flood the market.

In our view, the belief that maturity extensions present any sort of real solution is naïve. In fact, maturity extensions do little more than push the problem down the road. Moreover, those counting on maturity extensions to save the day may be in for a rude awakening, at least in CMBS. Here, not only are special servicers typically limited to granting at most two to four year maturity extensions, but AAA investors are already mobilizing to stanch any move to widespread extensions as a means of dealing with the refinancing problem.

Finally, there is also the view that the refinancing problem could fix itself. The argument appears to be that commercial real estate cash flows are likely to rebound quickly as the economy begins to improve due to pent-up demand. We do not find this argument particularly compelling. As we noted earlier in the report, even if cash flows were to recover to their peak 2007 levels, values would still be down 25-35% as a result of the paradigm shift in financing terms. It would require cash flows rebounding far beyond their peak levels to push values up sufficiently to overcome the steep declines. In our view, this is tantamount to predicting that the market will be saved by the next rent bubble.

Appendix 1

Important Disclosures

Additional information available upon request

For disclosures pertaining to recommendations or estimates made on a security mentioned in this report, please see the most recently published company report or visit our global disclosure look-up page on our website at http://gm.db.com/ger/disclosure/DisclosureDirectory.eqsr**.**

Analyst Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst(s). In addition, the undersigned lead analyst(s) has not and will not receive any compensation for providing a specific recommendation or view in this report. Richard Parkus

Deutsche Bank debt rating key

Buy: These bonds are expected to outperform other issues in the sector/industry group over the next three to six-month period.
Hold: These bonds are fairly valued currently. If owned, no need to sell, but we await events/ releases/ conditions that would make the bond attractive enough for us to upgrade. In the interim, the bond will likely perform as well as the average issue in the sector/industry group.
Sell: There exists a significant likelihood that these bonds will underperform relative to other issues in their sector/industry group, at least over the next three months.

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