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CMBS Research**The Future Refinancing Crisis
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I. Introduction

This report is a follow-up to a previous report “The Future Refinancing Crisis in Commercial Real Estate”, published April 23rd, 2009. That analysis applied a quantitative framework to explore the magnitude of potential refinancing problems faced by the commercial real estate debt markets over the coming decade. In particular, the analysis sought to answer the following question: Assuming that all currently outstanding (and non-defeased) commercial mortgages in CMBS deals reach maturity without defaulting, what proportion would qualify to refinance.¹ The startling conclusion was that, under reasonable assumptions, an extraordinarily large proportion of loans, perhaps 65%, or more, might well fail to qualify to refinance, at least without large equity infusions. In effect, the massive paradigm shift in underwriting standards, combined with 35-45% price declines and severely depressed cash flows, would likely strand a vast swath of the commercial real estate debt markets.

The current analysis both refines and extends the results of the original report. The most significant extension is the introduction of term defaults: both term (i.e. loan defaults occurring prior to maturity) and maturity defaults are now treated simultaneously in an internally consistent manner. This, of course, has a huge impact on maturity defaults, as many loans that, in the previous analysis, were projected to default at maturity, do not survive until maturity, in the current analysis, but rather default at some point prior to maturity due to severe cash flow stress. Thus, a large proportion of the previously projected maturity defaults become term defaults in the new analysis. This, in turn, has a major effect on both the magnitude and timing of losses, and hence on valuations.

We estimate that:

- Total losses, the sum of term and maturity default related losses, on the outstanding CMBS universe will be in the 9-12% range
- Total losses on the 2005-2008 vintages will be 11.6-15.3%
- Total losses on the 2007 vintage will exceed 21%

These loss rates are well above those experienced by life company portfolios during the early 1990s.

Modeling both term and maturity defaults provides a much clearer picture of the timing of defaults and losses. It is also useful in providing a time frame for when distressed real estate is likely to hit the market. This is particularly relevant as one of the main goals of the analysis is to provide a “road map” for the types, magnitudes and timing of distressed opportunities likely to be available within the commercial real estate market. The objective is to help encourage the entry of private capital into the sector. We regard the entry of private capital into commercial real estate as a critical step in dealing with the problems that, without question, lies ahead over the next five year, or more.

The report also addresses, in some detail, commercial real estate loans in bank portfolios, and the risk they pose both to the banks and the commercial real estate sector more generally. It is shown that bank exposures to both construction and core commercial real estate loans are very large, but grow alarmingly as one moves from large money center banks to smaller regional and community banks. The performance of both construction and core commercial real estate loans is also examined and compared to that of loans in CMBS pools. Delinquency rates are surging among construction loans, having already reached the

¹ By “qualify to refinance” we mean qualify for a loan sufficiently large to retire the current outstanding loan.

mid teens. Yet, we believe that the actual performance of construction loans is far worse than current delinquency rates suggest due to presence of interest reserves. We expect that ultimate losses on construction loans will be disastrously high.

We also expect that losses on core commercial real estate loans in bank portfolios will be at least as large as those in CMBS pools. Moreover, the fact that delinquency rates on core commercial real estate loans have consistently been two- to three-times that on CMBS loans over the past three years, lends support to this view. Finally, it appears that banks are far behind in terms of taking adequate charge offs for their problem real estate loan portfolios. We believe that the manner in which regulators deal with problems in banks commercial real estate loan portfolios will have a significant impact on the commercial real estate market more generally.

The structure of this report is as follows: Section II reviews the quantitative methodology we employ for estimating term and maturity default related losses, as well as our basic assumptions. A variety of updated results on the proportion of loans likely to have difficulty refinancing are also presented. Section III presents results on both term and maturity default related losses, and their timing. How the introduction of term defaults changes the basic picture of expected refinancing problems is explored. Section IV examines more deeply the problem of non-refinanceable loans. In particular, we draw a distinction between those that are potentially salvageable and those that are not. The scale of potential opportunities for private capital in commercial real estate is also examined. In Section V, the risks of commercial real estate loans in bank portfolios are examined in detail.

II. Review of the Methodology and Previous Results

This section reviews the quantitative methodology on which the analysis of commercial mortgages in CMBS deals is based. Updated versions of the results on refinancability and maturity default-related losses, from the original report, are then presented in order to provide a context for the new results, which are presented in the following sections.

The quantitative analysis is based on the entire outstanding (non-defeased) fixed rate conduit sector of CMBS, comprising in excess of 54,000 loans with an aggregate balance of approximately \$625 billion.² The first step is to project NOI for ten years for each individual loan on the basis of the type of property securing the loan and the MSA in which it is located. The projections are based in part on MSA/property type forecasts produced by Property and Portfolio Research (PPR). PPR produces five year forecasts of rents, vacancy rates and NOI. The analysis employs PPR's forecasts for the first five-year period. For the second five-year period, it is assumed that NOI returns linearly to its Q3 2008 level by the end of year ten. These NOI projections are then run through Intex's loan-level cash flow models. For each loan, the value of the underlying property(s) is estimated by applying a cap rate to projected cash flows. This allows for the calculation of an approximate LTV and DSCR at each point in time. Finally, assumptions are made about the maximum LTV, minimum DSCR and future financing costs (i.e. the future mortgage rates).

The above NOI projections and refinancing assumptions form the inputs to the term and maturity default models, and allows for estimates of term losses, refinancability, and maturity related losses.

The analysis employs two different NOI projection scenarios, the Severe Stress Scenario and the Moderate Stress Scenario. Each is based on a specific PPR projection scenario. The Severe Stress Scenario is the "base case" scenario for the analysis. The approximate degree of stress in each of the two scenarios is summarized in Figure 1. For each property type, the average (across MSAs) of the maximum percentage decline in NOI starting from Q3 2008 is reported.

Figure 1: Degrees of Stress in the Two NOI Projection Scenarios

Property Type	Average of Maximum NOI Declines Across MSAs	
	Severe Recession Scenario*	Moderate Recession Scenario **
Industrial	-16.3	-7.5
Multifamily	-15.0	-8.9
Office	-32.6	-12.4
Retail	-26.6	-21.5
Hotel ***	-20.0	-20.0

* PPR's "Severe Recession Scenario" as of Q3 2008

** PPR's "Deep Recession Scenario Fast Recovery" as of Q4 2008

*** Hotel projection not based on PPR projections

Source: Deutsche Bank and Property and Portfolio Research

There are two final comments about the NOI projections. First, NOI projections for hotels are not based on PPR forecasts. We simply assume that for each hotel NOI declines by 20% through the end of 2012 and then increases back to its Q3 2008 level by 2018. In view of

² When a loan is defeased, the borrower delivers to the trustee a portfolio of agency and US Treasury debt that replicates the required payments of the loan in exchange for release of the securing property. Defeased loans have neither credit nor refinance risk, and thus are excluded from this analysis.

recent performance data, this is clearly too small of a decline. According to Smith Travel Research, hotel RevPAR is already down 20% in the aggregate across chain scale categories, and this would translate into declines in NOI that are much larger than 20%, particularly in view of hotel's high operating leverage. The results of this can be seen in the next section, where total losses for hotels, including both term and maturity default related losses are projected to be only 5.5%. That this is far too low can be seen clearly in the recent delinquency data: hotel delinquency rates, as of June stood at 4.32%, up almost 300% in only four months.

Second, as noted above, it is assumed that NOI follows the PPR projections for the first five years, after which it returns to its Q3 2008 level in year ten. This, of course, implies a 10-year cumulative average growth rate (CAGR) of 0%. While this may appear to be a harsh assumption on the surface, in reality it is not. For example, average office NOI needs to grow by nearly 50% over the second five-year period to get back to its Q3 2008 starting point. This represents an extraordinarily fast pace of growth for NOI.

Figure 2 summarizes the cap rates used in the analysis. The cap rates are assumed to decline modestly after five years. The corresponding debt yield, assuming a 70 LTV, is also given.³

Figure 2: Assumed Cap Rates for Projections

Property Type	Months	Months	Months	Months	Debt Yield **
	0-24	24-60	60-120	120-240	
Industrial	8.5	8.5	8.0	8.0	11.5 - 12.5
Multifamily	8.0	8.0	8.0	8.0	11.5
Office	8.5	8.5	8.0	8.0	11.5 - 12.5
Retail	8.5	8.5	8.0	8.0	11.5 - 12.5
Hotel *	9.0	9.0	8.0	8.0	11.5 - 13.0

* Hotel projection not based on PPR projections

** Debt yield at maximum at LTV of 70

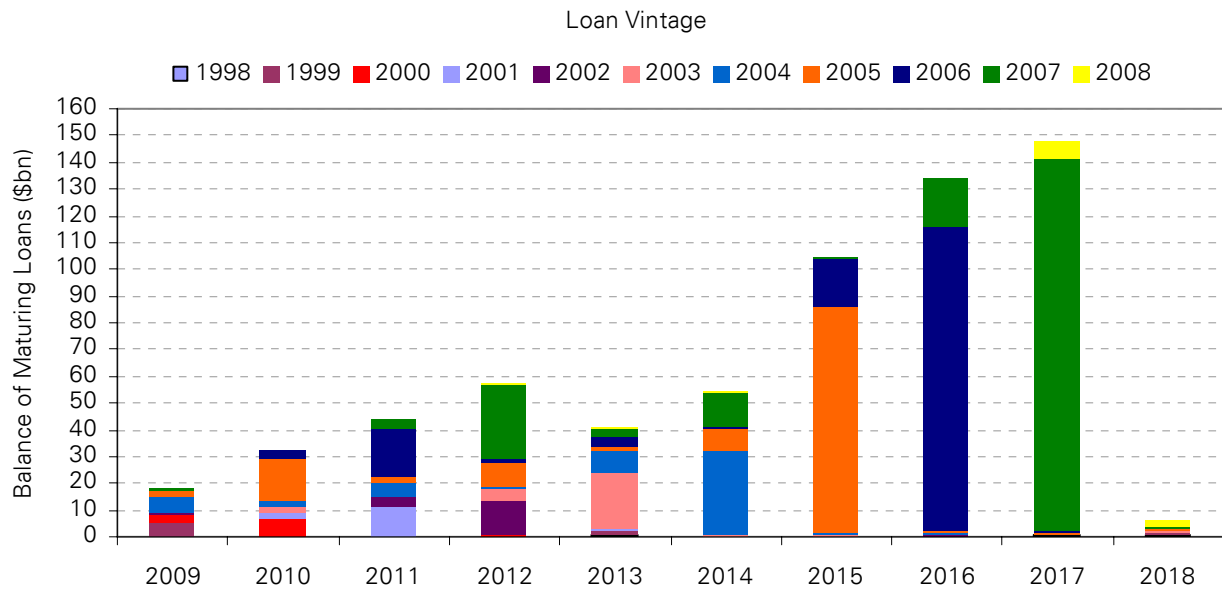
Source: Deutsche Bank

Finally, the following refinancing assumptions are employed to test for refinaneability:

- Mortgage rate: 8%
- Maximum LTV: 70
- Minimum DSCR: 1.3x

Before proceeding, it will be helpful for understanding the non-refinaneability and maturity loss results, to know the amount of loans from each historical CMBS vintage that are scheduled to mature in each year over the coming decade. This information is summarized in Figure 3, which is reprinted from the previous report.

³ The concept of a debt yield, defined as the NOI divided by the loan amount has gained in popularity recently.

Figure 3: Maturity Profile of Fixed Rate Conduit Commercial Mortgages in CMBS Transactions

Source: Deutsche Bank and Intex

The term and maturity default models have been refined since the publication of the original report. The results for non-refinanceability and maturity default related losses, by maturity year, are summarized in Figure 4 under the severe stress scenario and in Figure 5 under the moderate stress scenario. Three categories are presented in Figures 4 and 5. The “Non-Refinanceable” category reflects all loans that fail to qualify without equity infusions. The “Non-Refinanceable Loans with Losses” category reflects those loans that do not qualify and also experience a loss. Typically, these are loans having an LTV in excess of 90%. Note that a loan with an 80% LTV would not qualify to refinance, but would also probably not lead to a loss. The final category, “Maturity Default Losses”, simply reflects the losses from the loans in the previous category. Thus, under the severe stress scenario, 72.5% of loans fail to qualify to refinance, but only 45.2% of loans suffer losses. Total losses are 11.3%, or \$70.1 billion. Under the moderate stress scenario, 64.4% of loans fail to qualify, while only 36.6% suffer losses. Total losses are 9.0%, or \$55.8 billion.

Under both stress scenarios, the maturity years with by far the highest maturity default related loss rates are 2011, 2012 and 2017. This certainly makes intuitive sense, as 2011 and 2012 have high proportions of 5-year loans from the 2006 and 2007 vintages, respectively. This can be seen in Figure 3. Moreover, 2017 loan maturities are almost exclusively from the 2007 vintage. This certainly suggests that the 5-year loans from the 2006 and 2007 vintages are likely to suffer massive maturity default losses.

As expected, however, the largest dollar amounts of maturity default related losses occur in years 2016 and 2017.

Figure 4: Non-Refinanceability and Maturity Default Related Losses by Maturity Year: Severe Stress Scenario

Maturity Year	Maturities* (\$ Billions)	Non-Refinanceable		Non-Refinanceable Loans with Losses		Maturity Default Losses	
		Balance (\$ Billions)	%**	Balance (\$ Billions)	%**	Balance (\$ Billions)	%**
2009	17.5	8.2	46.9	3.6	20.6	1.1	6.2
2010	33.6	22.6	67.3	14.1	41.9	3.0	9.0
2011	43.6	31.6	72.4	21.1	48.5	5.8	13.4
2012	58.3	46.9	80.3	35.6	61.0	11.8	20.3
2013	42.4	29.3	69.0	16.1	37.9	4.3	10.2
2014	51.7	37.9	73.4	23.1	44.6	5.3	10.3
2015	98.7	68.8	69.7	38.8	39.3	7.7	7.8
2016	135.3	99.4	73.4	59.2	43.7	13.2	9.8
2017	135.8	104.4	76.9	69.6	51.3	17.7	13.0
2018	6.1	2.7	45.3	0.6	9.3	0.1	2.1
Total	623.1	451.9	72.5	281.8	45.2	70.1	11.3

* Excludes defeased loans

** Percent of current balance of scheduled maturities excluding defeased loans

Source: Deutsche Bank

Figure 5: Non-Refinanceability and Maturity Default Related Losses by Maturity Year: Moderate Stress Scenario

Maturity Year	Maturities* (\$ Billions)	Non-Refinanceable		Non-Refinanceable Loans with Losses		Maturity Default Losses	
		Balance (\$ Billions)	%**	Balance (\$ Billions)	%**	Balance (\$ Billions)	%**
2009	17.5	7.7	44.2	3.0	17.3	0.9	5.3
2010	33.6	21.5	64.0	12.7	37.8	2.7	8.2
2011	43.6	28.7	65.8	18.4	42.2	4.8	11.1
2012	58.3	41.4	71.0	31.2	53.5	9.8	16.8
2013	42.4	21.2	50.0	10.5	24.8	2.8	6.5
2014	51.7	29.8	57.5	15.1	29.2	3.4	6.5
2015	98.7	58.4	59.2	25.7	26.1	5.1	5.2
2016	135.3	90.6	67.0	47.1	34.8	10.5	7.8
2017	135.8	99.4	73.2	63.8	47.0	15.6	11.5
2018	6.1	2.5	41.0	0.5	8.9	0.1	2.0
Total	623.1	401.2	64.4	228.1	36.6	55.8	9.0

* Excludes defeased loans

** Percent of current balance of scheduled maturities excluding defeased loans

Source: Deutsche Bank

The data in Figures 6 and 7 simply re-organize the results by origination vintage instead of maturity year, a different stratification. (Note that the numbers are slightly different only because we exclude the pre-2000 vintages from the figures.) The figures show the startling degree to which the 2007 vintage is inferior to all preceding vintage, and even the 2008 vintage.

It should be kept in mind that in Figures 6 and 7 losses are calculated as a percentage of *current balances*. Thus, for seasoned vintages which have experienced a great deal of paydowns or defeasance, these loss rates will differ markedly from the more usual calculation of total losses as a percentage of original balances.

Figure 6: Non-Refinanceability and Maturity Default Related Losses by Vintage: Severe Stress Scenario

Origination Vintage	Maturities* (\$ Billions)	Non-Refinanceable		Non-Refinanceable Loans with Losses		Maturity Default Losses	
		Balance (\$ Billions)	%**	Balance (\$ Billions)	%**	Balance (\$ Billions)	%**
2000	10.9	4.7	42.9	1.7	15.5	0.5	5.0
2001	18.0	9.3	51.8	3.9	21.4	1.0	5.7
2002	19.5	11.3	58.1	5.4	27.5	1.2	6.1
2003	33.3	19.6	59.0	9.7	29.1	2.1	6.3
2004	54.3	36.5	67.3	19.3	35.4	3.8	7.0
2005	123.5	89.4	72.4	55.0	44.6	11.4	9.2
2006	158.9	117.5	73.9	71.2	44.8	16.0	10.1
2007	189.9	153.1	80.6	110.8	58.4	32.7	17.2
2008	10.7	6.6	62.2	3.5	33.2	0.9	8.2
2000 - 2008	618.9	448.1	72.4	280.5	38.3	69.6	9.5
2005 - 2008	482.9	366.6	75.9	240.6	48.0	61.0	12.2

* Excludes defeased loans

** Percent of current balance of scheduled maturities excluding defeased loans

Source: Deutsche Bank

Figure 7: Non-Refinanceability and Maturity Default Related Losses by Vintage: Moderate Stress Scenario

Origination Vintage	Maturities* (\$ Billions)	Non-Refinanceable		Non-Refinanceable Loans with Losses		Maturity Default Losses	
		Balance (\$ Billions)	%**	Balance (\$ Billions)	%**	Balance (\$ Billions)	%**
2000	10.9	4.2	38.9	1.4	12.8	0.5	4.7
2001	18.0	7.7	42.7	3.1	17.0	0.9	4.8
2002	19.5	8.3	42.6	3.0	15.4	0.8	4.2
2003	33.3	13.4	40.2	5.5	16.6	1.3	3.8
2004	54.3	27.4	50.5	11.5	21.1	2.3	4.2
2005	123.5	78.2	63.3	40.1	32.4	8.1	6.5
2006	158.9	106.9	67.3	56.5	35.5	12.4	7.8
2007	189.9	146.3	77.0	103.3	54.4	28.7	15.1
2008	10.7	6.1	56.8	3.1	28.7	0.7	6.7
2000 - 2008	618.9	398.4	64.4	227.4	36.7	55.5	9.0
2005 - 2008	482.9	337.4	69.9	202.9	42.0	49.8	10.3

* Excludes defeased loans

** Percent of current balance of scheduled maturities excluding defeased loans

Source: Deutsche Bank

Figure 8 re-expresses the projected maturity default related losses as a percentage of original balance. Existing realized losses are also taken account of so that the results reflect projected average lifetime performance of the vintages. Even though the weak vintages of 2006-2008 are expected to see very high losses, particularly by historical standards, the more seasoned vintages are still expected to perform extremely well.

Figure 8: Expected Losses as % of Original Balance by Vintage for Severe and Moderate Stress Scenarios

Vintage	Original Balance (\$ Billions)	Existing Losses		Severe Stress Scenario		Moderate Stress Scenario	
		Balance (\$ Billions)	%*	Projected Losses		Projected Losses	
				Balance (\$ Billions)	%*	Balance (\$ Billions)	%*
2000	27.9	0.4	1.6	0.5	1.9	0.5	1.8
2001	37.0	0.4	1.1	1.0	2.8	0.9	2.3
2002	34.8	0.2	0.5	1.2	3.4	0.8	2.3
2003	54.7	0.1	0.2	2.1	3.8	1.3	2.3
2004	74.5	0.1	0.1	3.8	5.1	2.3	3.0
2005	137.1	0.1	0.1	11.4	8.3	8.1	5.9
2006	162.8	0.0	0.0	16.0	9.8	12.4	7.6
2007	190.9	0.0	0.0	32.7	17.1	28.7	15.0
2008	10.7	0.0	0.0	0.9	8.2	0.7	6.6
Total	730.6	1.3	0.2	69.6	9.5	55.5	7.6

* Percentage of original balance

Source: Deutsche Bank

III. Introduction of Term Defaults and Its Impact on the Results

In this section the results of the original report are extended by adding term defaults into the analysis. The triggers for term defaults and maturity defaults are quite different. Term defaults are triggered by cash flow stress when there is negative equity in the deal. In particular, it is assumed that in the presence of negative equity, the borrower will continue to make the mortgage payments as long as the property generates sufficient cash flow to cover debt service. However, as the DSCR declines sufficiently below 1.0x for a sufficiently long period of time, the borrower chooses to default rather than carry the property. The trigger for a maturity default, on the other hand, is related more to refinancability. Inability to refinance at maturity when there is little or no equity leads to borrowers to opt for maturity default.

Adding term defaults will certainly reduce projected maturity defaults and losses to some degree as some proportion of the loans that previously defaulted at maturity now default prior to maturity. However, there are also loans that previously did not default at maturity that do, in the current analysis, experience a term default. As a result, the total number (and balance) of loans that default is significantly higher than before.

Figure 9 presents, for the Severe Stress Scenario, projected term defaults and term losses, projected maturity defaults and maturity losses and existing losses, all by origination vintage. These are combined to arrive at estimated total default rates and total loss rates. All rates are with respect to original balances, thus these numbers reflect projected lifetime performance. Figure 10 reports the analogous results for the Moderate Stress Scenario.

Figure 9: Projected Term, Maturity and Total Loss Rates by Origination Vintage: Severe Stress Scenario

Origination Vintage	Projected Term			Projected Maturity			Existing	Projected Total	
	Default (%)*	Loss (%)*	Severity (%)*	Default (%)*	Loss (%)*	Severity (%)*	Loss (%)*	Default (%)*	Loss (%)*
2000	2.6	1.4	52.3	4.3	0.9	21.9	1.6	6.9	3.9
2001	2.5	1.2	48.7	8.5	1.9	21.9	1.1	11.1	4.2
2002	3.1	1.4	46.0	12.9	2.2	17.2	0.5	16.0	4.2
2003	4.0	1.9	47.4	14.1	2.2	15.5	0.2	18.2	4.3
2004	6.5	2.9	44.8	20.6	3.0	14.7	0.1	27.1	6.0
2005	8.7	4.2	48.6	32.5	5.5	16.9	0.1	41.2	9.8
2006	14.7	7.4	50.3	31.0	5.5	17.9	0.0	45.6	12.9
2007	21.7	12.1	55.8	38.4	9.2	23.9	0.0	60.0	21.3
2008	17.7	8.5	47.9	19.8	5.7	28.7	0.0	37.5	14.2
2000-2008	12.2	6.3	52.2	27.7	5.5	19.7	0.2	39.8	12.0
2005-2008	15.8	8.3	52.9	34.0	6.9	20.3	0.0	49.7	15.3

* Percent calculated with respect to original balance

Source: Deutsche Bank

The average loss rate for the 2000-2008 vintages is projected to be 12% under the Severe Stress Scenario. This is split fairly evenly between term loss rate (6.3%) and maturity loss rate (5.5%). For the problem vintages, 2005-2008, the total loss rate is 15.3%. Loss rates for the seasoned pre-2005 vintages are higher when we model term defaults, but they remain quite good overall. The 2007 vintage is projected to suffer a staggering 21.3% total loss rate.

Average loss severity rates are also reported. Loss severity rates are much higher for term defaults (52%) than for maturity defaults (20%), which accords well with what is actually observed in practice. It is worth noting that loss severity rates are outcomes of the models, not inputs.

Figure 10: Projected Term, Maturity and Total Loss Rates by Origination Vintage: Moderate Stress Scenario

Origination Vintage	Projected Term			Projected Maturity			Existing	Projected Total	
	Default (%)*	Loss (%)*	Severity (%)*	Default (%)*	Loss (%)*	Severity (%)*	Loss (%)*	Default (%)*	Loss (%)*
2000	2.7	1.4	52.9	3.3	0.8	24.7	1.6	6.0	3.8
2001	3.4	1.5	44.7	5.6	1.2	21.2	1.1	9.0	3.8
2002	3.6	1.6	45.2	5.7	1.0	18.2	0.5	9.3	3.2
2003	3.2	1.5	48.9	7.5	1.1	14.2	0.2	10.6	2.8
2004	4.1	1.9	46.4	12.5	1.8	14.5	0.1	16.6	3.8
2005	5.6	2.8	49.7	24.6	4.0	16.3	0.1	30.2	6.8
2006	8.3	4.3	52.3	27.9	4.9	17.4	0.0	36.2	9.2
2007	15.0	8.4	56.3	40.3	8.7	21.7	0.0	55.3	17.2
2008	11.4	5.4	47.1	23.2	4.8	20.8	0.0	34.5	10.2
2000-2008	8.1	4.3	53.1	24.2	4.6	19.0	0.2	32.3	9.1
2005-2008	10.2	5.5	54.0	31.6	6.1	19.3	0.0	41.8	11.6

* Percent calculated with respect to original balance

Source: Deutsche Bank

The results under the Moderate Stress Scenario are qualitatively similar to those of the Severe Stress Scenario. These two scenarios project that total conduit CMBS loss rates to be in the 9-12% range for the 2000-2008 vintages, and 17-21% range for the 2007 vintage.

Figures 11 and 12 present the same information as in Figures 9 and 10, except that it is presented in terms of dollar amount instead of percentages of original balances. Total losses are projected to be between \$66 billion and \$88 billion. Total defaults are projected at \$235 - \$290 billion.

Figure 11: Projected Term, Maturity and Total Loss Amounts by Origination Vintage: Severe Stress Scenario

Origination Vintage	Projected Term		Projected Maturity		Existing	Projected Total	
	Default (\$ Billions)	Loss (\$ Billions)	Default (\$ Billions)	Loss (\$ Billions)	Loss (\$ Billions)	Default (\$ Billions)	Loss (\$ Billions)
2000	0.7	0.4	1.2	0.3	0.44	1.9	1.1
2001	0.9	0.5	3.2	0.7	0.39	4.1	1.5
2002	1.1	0.5	4.5	0.8	0.18	5.6	1.4
2003	2.2	1.0	7.7	1.2	0.09	9.9	2.3
2004	4.8	2.2	15.4	2.3	0.09	20.2	4.5
2005	11.9	5.8	44.5	7.5	0.08	56.5	13.4
2006	23.9	12.0	50.4	9.0	0.04	74.3	21.1
2007	41.4	23.1	73.2	17.5	0.01	114.6	40.6
2008	1.9	0.9	2.1	0.6	0.00	4.0	1.5
2000-2008	88.8	46.4	202.3	39.8	1.32	291.1	87.5
2005-2008	79.1	41.8	170.3	34.7	0.13	249.4	76.6

Source: Deutsche Bank

Figure 12: Projected Term, Maturity and Total Loss Amounts by Origination Vintage: Moderate Stress Scenario

Origination Vintage	Projected Term		Projected Maturity		Existing	Projected Total	
	Default (\$ Billions)	Loss (\$ Billions)	Default (\$ Billions)	Loss (\$ Billions)	Loss (\$ Billions)	Default (\$ Billions)	Loss (\$ Billions)
2000	0.7	0.4	0.9	0.2	0.44	1.7	1.1
2001	1.3	0.6	2.1	0.4	0.39	3.3	1.4
2002	1.3	0.6	2.0	0.4	0.18	3.3	1.1
2003	1.7	0.8	4.1	0.6	0.09	5.8	1.5
2004	3.0	1.4	9.3	1.3	0.09	12.4	2.9
2005	7.6	3.8	33.7	5.5	0.08	41.3	9.4
2006	13.5	7.1	45.5	7.9	0.04	59.0	15.0
2007	28.6	16.1	77.0	16.7	0.01	105.6	32.8
2008	1.2	0.6	2.5	0.5	0.00	3.7	1.1
2000-2008	59.0	31.3	177.1	33.6	1.32	236.1	66.2
2005-2008	50.9	27.5	158.7	30.6	0.1	209.7	58.3

Source: Deutsche Bank

Finally, Figures 13 and 14 reorganize the data in Figures 11 and 12 to present losses in terms of the year in which they occur. This gives important information about the projected timing of losses.

Figure 13: Projected Term, Maturity and Total Loss Amounts by Year of Loss: Severe Stress Scenario

Year	Projected Term		Projected Maturity		Projected Total	
	Default (\$ Billions)	Loss (\$ Billions)	Default (\$ Billions)	Loss (\$ Billions)	Default (\$ Billions)	Loss (\$ Billions)
2009	18.5	9.5	2.6	0.6	21.1	10.2
2010	2.6	1.4	13.4	2.7	16.0	4.1
2011	5.9	2.8	19.4	5.0	25.3	7.8
2012	51.9	27.1	32.4	10.2	84.3	37.3
2013	11.4	6.2	12.2	2.3	23.6	8.5
2014	0.3	0.2	17.8	3.1	18.1	3.3
2015	0.0	0.0	27.7	3.7	27.7	3.7
2016	0.0	0.0	36.8	5.6	36.8	5.6
2017	0.0	0.0	40.3	6.8	40.3	6.8
2018	0.0	0.0	0.2	0.1	0.2	0.1
Total	90.6	47.2	202.8	40.0	293.4	87.2

Source: Deutsche Bank

Figure 14: Projected Term, Maturity and Total Loss Amounts by Year of Loss: Moderate Stress Scenario

Year	Projected Term		Projected Maturity		Projected Total	
	Default (\$ Billions)	Loss (\$ Billions)	Default (\$ Billions)	Loss (\$ Billions)	Default (\$ Billions)	Loss (\$ Billions)
2009	19.3	10.0	2.3	0.6	21.6	10.6
2010	8.0	3.8	11.9	2.3	19.9	6.1
2011	14.2	7.6	15.9	3.8	30.1	11.3
2012	18.0	10.1	26.4	7.2	44.4	17.3
2013	0.9	0.5	7.8	1.3	8.7	1.8
2014	0.3	0.2	12.0	2.0	12.3	2.1
2015	0.0	0.0	19.3	2.6	19.3	2.6
2016	0.0	0.0	35.3	5.6	35.3	5.6
2017	0.0	0.0	46.1	8.2	46.1	8.2
2018	0.0	0.0	0.3	0.1	0.3	0.1
Total	60.6	32.1	177.3	33.7	238.0	65.8

Source: Deutsche Bank

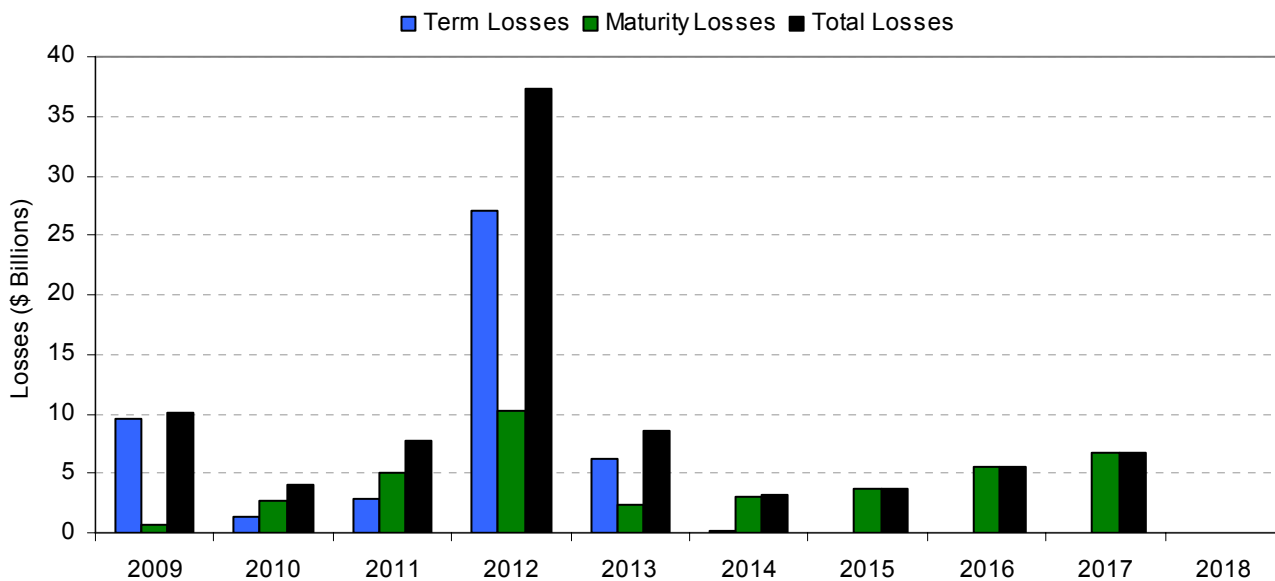
The loss timing data in Figure 13 is presented visually in Figure 15. It is important to note that in both the term and maturity default models losses are assumed to be realized immediately upon default—loss timing is really just default timing. This approach is taken, despite the fact that in reality there is a long lag between defaults and loss realization (typically 18-24 months), in order to account for appraisal reductions, which are critical in valuing CMBS securities.⁴

Interestingly, maturity default related losses build quickly from 2010 and peak in 2012, not in 2017. This reflects the fact that 2012 is projected to be the trough of the downturn.

Term losses, however, are concentrated in the 2009-2013 time period. The loss timing looks a bit odd because, by design, the term default/loss is taken at that point along the NOI projection that produces the greatest loss. This typically occurs close to 2012, since this is where the maximum decline in NOI takes place. The large losses in 2009 reflect the fact that the model immediately defaults all loans that are currently 60-days delinquent or worse.

⁴ From a cash flow and valuation perspective, appraisal reductions effectively shorten the time between defaults and losses to just a few months.

Figure 15: Projected Timing of Term and Maturity Defaults/Losses



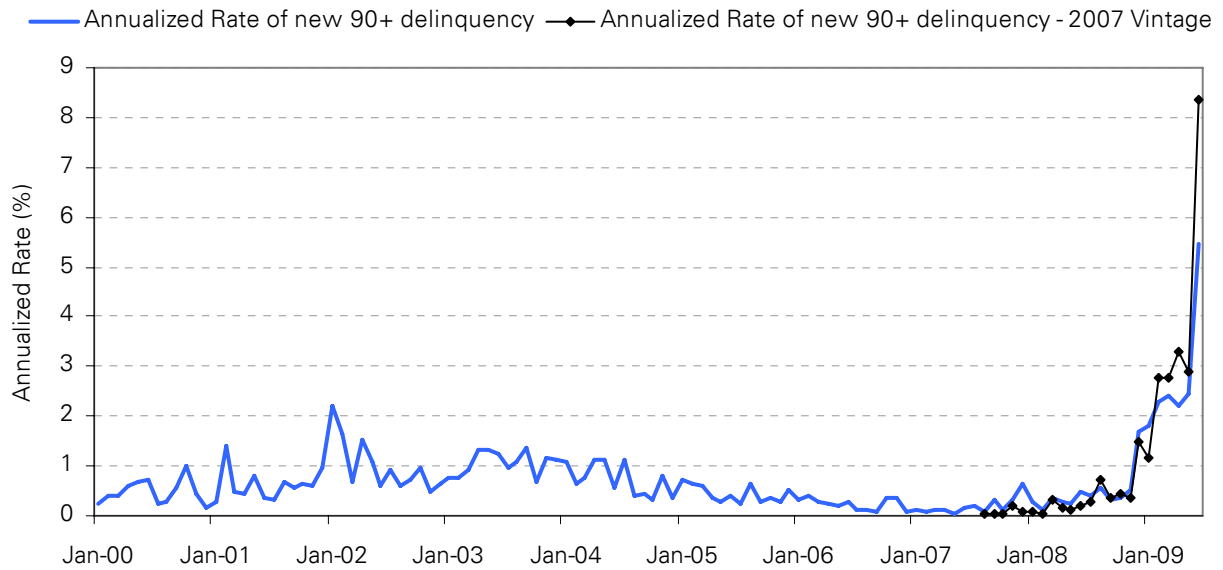
Source: Deutsche Bank

Given that the models are projecting very large losses over the next five years, one naturally wonders about the consistency of current loan performance trends with these projections. In order to gauge this consistency, current delinquency data for fixed rate conduit loans can be used. It turns out that simple delinquency rates are not of much use here, since loans can remain in the 90+ day delinquency category for several years. What is needed is an approximate current default rate for CMBS loans. This can be estimated by calculating the annualized rate of flow of loans into the 90+ day delinquency category.⁵

The new 90+ day delinquency rate, the proxy for the default rate, is presented in Figure 16, both for all outstanding loans (blue line) and for the 2007 vintage loans (black line). The data suggests that for the CMBS universe as a whole, loans are now defaulting at a rate of approximately 5.5% annually. If defaults remain at this level for two years and the loss severity rate is 50%, then losses will reach the projected level of term losses. Turning next to the 2007 vintage loans, the current default rate is about 8.5%. Were this pace to be maintained for three years, with a loss severity, again, of 50%, losses would reach the 12% projected rate for this vintage. Of course, in reality, we expect loan performance to continue to deteriorate for the next 12-24 months. Therefore, we believe that these loss projections are roughly consistent with the current loan performance data, at least for the moment.

⁵ In order to avoid double counting, i.e. loans that become 90+ days delinquent, cure and then become 90+ days delinquent again at some point in the future being counted as two separate defaults, we exclude loans from the calculation once they have become 90+ delinquent for the first time.

Figure 16: Approximate Annualized Default Rates for Both the CMBS Universe and the 2007 Vintage



Source: Deutsche Bank and Intex

Finally, Figure 17 presents projected term and maturity default related losses by property type. Not surprisingly, office leads the way with nearly 22% projected total losses. Retail and multifamily lag well behind with 13.9% and 15.1% projected losses, respectively. Clearly, projected total loss rates for hotel loans, at 5.5%, are grossly inadequate.

Figure 17: Projected Term and Maturity Default Related Losses by property Sector

Property Sector	Projected Term		Projected Maturity		Projected Total	
	Default %*	Loss %*	Default %*	Loss %*	Default %*	Loss %*
Hotel	5.3	3.0	16.2	2.6	21.6	5.5
Industrial	4.5	2.1	18.1	2.3	22.6	4.4
Multifamily	14.3	7.2	36.9	7.9	51.2	15.1
Office	26.3	14.4	32.9	7.3	59.2	21.7
Retail	13.5	6.6	40.4	7.3	54.0	13.9
Multi-Property	8.9	4.9	35.6	8.0	44.5	12.9
Other	17.7	9.7	30.9	6.1	48.6	15.8

* Percent calculated with respect to balance at time of default

Source: Deutsche Bank

IV. A More Detailed Analysis of Non-Refinanceable Loans

The analysis has, until now, focused on defaults and losses of various types and the proportion of loans that may not qualify for refinancing at maturity. This section takes a somewhat different perspective of the problem by attempting to identify, in more detail, when and where the opportunities for private capital may be in commercial real estate.

To begin with, loans that do not qualify to refinance are categorized into two groups. The first group consists of loans that do not qualify to refinance, but could nevertheless potentially escape foreclosure through the use of mezzanine financing or some type of equity partnership. This group consists, roughly, of loans whose LTVs at maturity are below 100%. (In reality it might be better approximated by loans with LTVs below 90-95%.) The second group consists of loans that likely cannot be salvaged—loans with maturity LTVs in excess of 100%. These loans must, in the end, either be sold to distressed investors or foreclosed upon and the properties liquidated.⁶ Thus, the first category of loans represents opportunities for mezzanine finance and/or equity partnerships, while the second category represent opportunities for distressed real estate or loan investors. While this breakdown is admittedly crude, we believe it has some value in helping to refine the estimated magnitude of various types of potential future opportunities.

Figures 18-21 use the above categorization to estimate the approximate size of these opportunities over time. In particular, in Figure 18 it is assumed, once again, that there are no term defaults, only maturity defaults. The aggregate balance of loans in each category, as well as their equity deficiency, is presented for each maturity year, for both the Severe and Moderate Stress Scenarios. Under the Severe Stress Scenario, \$402 billion dollars of loans are salvageable, while \$180 billion are not. Under the Moderate Stress Scenario, \$442 billion are salvageable and \$141 billion are not. The results suggest a need for approximately \$35-\$40 billion in new equity or mezzanine financing in the case of salvageable loans.

It should be noted that in Figures 18-21 the aggregate balance is somewhat lower than in previous figures. The reason is that the balances used are the balances either at maturity or at the time of term default. They are not today's current balances.

⁶ Discounted payoffs are another possibility.

Figure 18: Approximate Size and Equity Deficiency for Salvageable and Non-Salvageable Loans by Maturity Year: Assuming No Term Defaults

Maturity Year	Severe Scenario				Moderate Scenario			
	LTV <=100		LTV > 100		LTV <=100		LTV > 100	
	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)
2009	15.6	0.9	2.5	1.2	17.2	0.7	2.0	1.0
2010	24.6	2.3	8.4	3.4	25.9	2.3	7.1	2.9
2011	28.7	2.7	13.9	6.6	31.1	2.6	11.5	5.4
2012	28.6	2.7	27.8	14.0	32.7	2.6	23.6	11.6
2013	29.0	2.4	10.1	4.8	33.3	1.9	5.9	2.9
2014	33.7	3.2	14.1	6.2	39.9	2.9	7.9	3.6
2015	68.9	6.6	20.2	8.7	76.0	5.3	13.1	5.7
2016	88.7	8.8	35.2	15.4	96.5	8.2	27.4	11.9
2017	80.3	7.8	47.1	21.3	85.1	7.7	42.3	18.9
2018	3.8	0.1	0.4	0.2	3.8	0.1	0.4	0.2
Total	401.9	37.4	179.6	81.9	441.5	34.3	141.3	64.1

Source: Deutsche Bank

Figure 19 simply reorganized the data in Figure 18 and presents in by origination vintage.

Figure 19: Approximate Size and Equity Deficiency for Salvageable and Non-Salvageable Loans by Vintage: Assuming No Term Defaults

Vintage Year	Severe Scenario				Moderate Scenario			
	LTV <=100		LTV > 100		LTV <=100		LTV > 100	
	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)
2000	9.6	0.4	0.9	0.4	9.8	0.4	0.8	0.4
2001	15.2	1.0	1.9	0.9	15.6	0.8	1.5	0.7
2002	15.6	1.2	2.5	1.2	16.5	0.8	1.6	0.8
2003	25.1	2.0	5.1	2.2	27.6	1.4	2.6	1.2
2004	39.4	3.4	10.1	4.3	44.2	2.7	5.5	2.3
2005	82.9	8.5	30.6	13.2	92.0	7.4	21.5	9.2
2006	104.5	10.5	42.3	18.6	115.3	10.0	31.5	13.8
2007	97.0	9.5	83.1	39.6	106.0	10.1	74.1	34.6
2008	7.4	0.5	2.4	1.1	8.0	0.5	1.9	0.8
Total	396.7	37.0	178.7	81.4	435.1	34.1	140.9	63.9

Source: Deutsche Bank

Figures 20 and 21 present the same information as Figures 18 and 19, except here, term defaults and losses are turned back on again. The loans that term default are not reflected in the figures. Rather, the figures represent the situation at maturity for those loans that survive to maturity. Of course, the term defaults will themselves represent additional opportunities, particularly for distressed real estate and loan investors. These are not captured in the figures.

Figure 20: Approximate Size and Equity Deficiency for Salvageable and Non-Salvageable Loans by Maturity Year: With Term Defaults

Maturity Year	Severe Scenario				Moderate Scenario			
	LTV <=100		LTV > 100		LTV <=100		LTV > 100	
	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)
2009	14.2	0.7	1.5	0.7	14.4	0.6	1.3	0.6
2010	24.2	2.1	7.8	3.1	25.4	2.2	6.5	2.6
2011	28.2	2.5	12.4	5.8	30.5	2.4	9.3	4.3
2012	28.2	2.6	24.7	12.2	32.2	2.5	19.0	8.8
2013	28.8	2.3	6.3	2.6	32.9	1.8	3.3	1.4
2014	33.4	3.1	8.9	3.5	39.5	2.8	5.0	1.9
2015	67.7	6.3	9.6	3.6	74.9	5.2	7.0	2.6
2016	84.0	7.9	15.8	6.0	93.9	7.8	16.4	6.1
2017	74.7	6.8	21.2	8.0	82.8	7.4	25.5	9.8
2018	3.5	0.1	0.2	0.1	3.7	0.1	0.2	0.1
Total	386.8	34.5	108.4	45.4	430.2	32.7	93.7	38.1

Source: Deutsche Bank

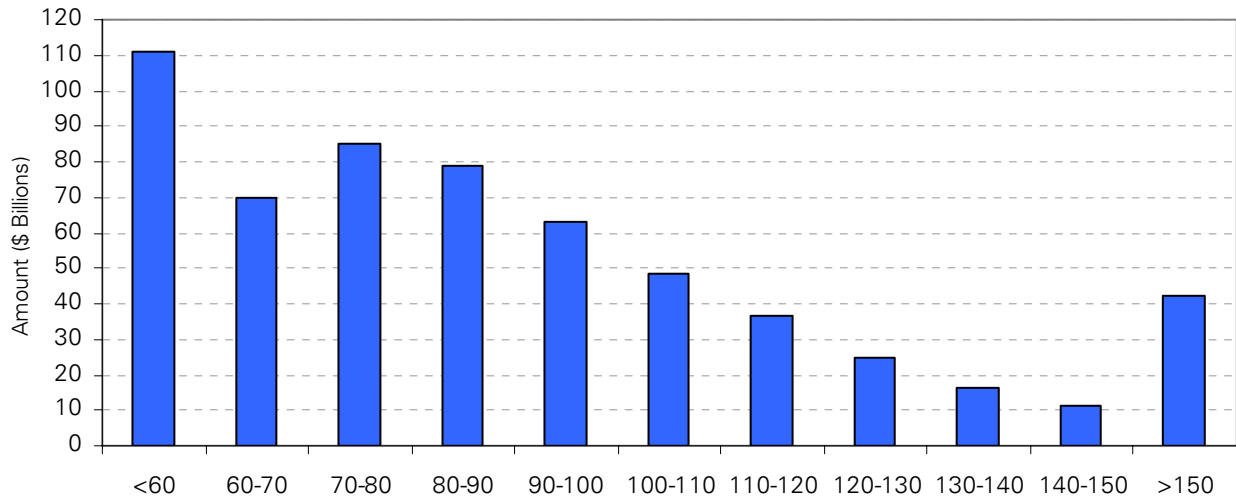
Figure 21: Approximate Size and Equity Deficiency for Salvageable and Non-Salvageable Loans by Vintage: With Term Defaults

Vintage Year	Severe Scenario				Moderate Scenario			
	LTV <=100		LTV > 100		LTV <=100		LTV > 100	
	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)	Balance (\$ Bil)	Equity Deficiency (\$ Bil)
2000	9.2	0.3	0.5	0.2	9.2	0.3	0.4	0.2
2001	14.7	0.9	1.4	0.6	15.1	0.7	0.6	0.3
2002	15.4	1.1	1.7	0.7	16.2	0.7	0.7	0.3
2003	24.9	1.9	3.2	1.2	27.3	1.3	1.2	0.4
2004	38.5	3.3	6.3	2.4	43.1	2.6	3.5	1.3
2005	81.6	8.3	20.6	8.3	91.0	7.2	15.4	6.1
2006	99.7	9.5	24.4	9.9	112.7	9.6	21.4	8.5
2007	91.3	8.6	48.6	21.3	103.2	9.7	49.1	20.5
2008	6.5	0.3	1.6	0.8	7.3	0.4	1.4	0.6
Total	381.8	34.2	108.3	45.4	425.2	32.6	93.7	38.1

Source: Deutsche Bank

Figures 22-26 show different stratifications for maturity LTVs assuming there are no term defaults. For each figure, the x-axis is maturity LTV. Figure 22 provides a histogram for maturity LTVs by dollar amount. The very large upper tail of the distribution represents loans with very high LTVs. Of course, most of the very high LTV loans term default prior to maturity.

Figure 22: Distribution of Maturity Date LTVs Assuming No Term Defaults: Severe Stress Scenario

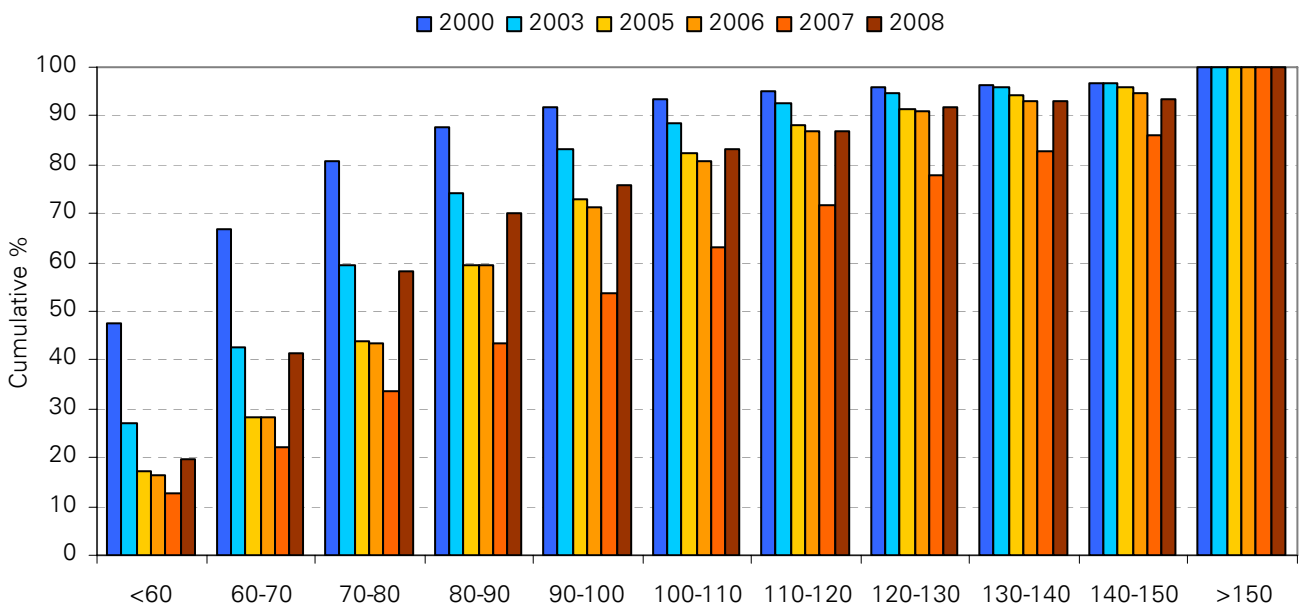


Source: Deutsche Bank

Figures 23 and 24 stratify the maturity LTV data by origination vintage. The figures present the cumulative distribution functions for vintages 2000, 2003, 2005, 2006, 2007 and 2008. Each bar represents the percentage of loans with maturity LTV at, or below, the indicated level. For example, 48% of the 2000 vintage have maturity LTVs below 60%, while only 13% of the 2007 vintage have maturity LTVs of 60% or below.

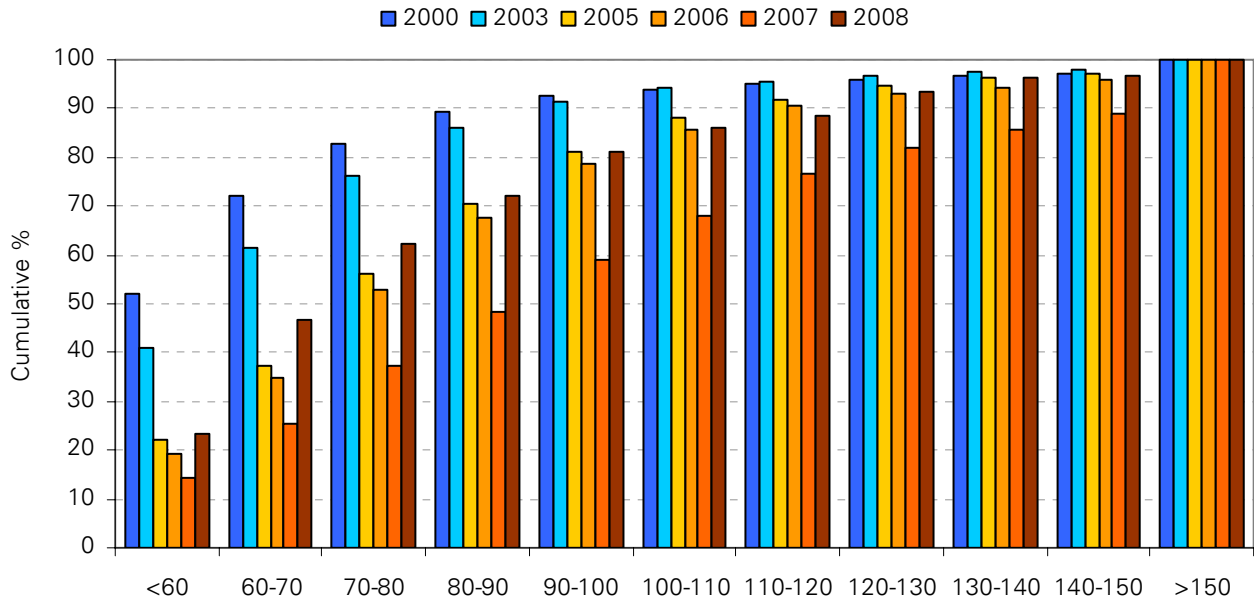
It can be seen that seasoned vintages contain much higher proportions of loans with lower maturity LTVs than more recent vintages.

Figure 23: Cumulative Distribution of Maturity LTVs by Origination Vintage: Severe Stress Scenario



Source: Deutsche Bank

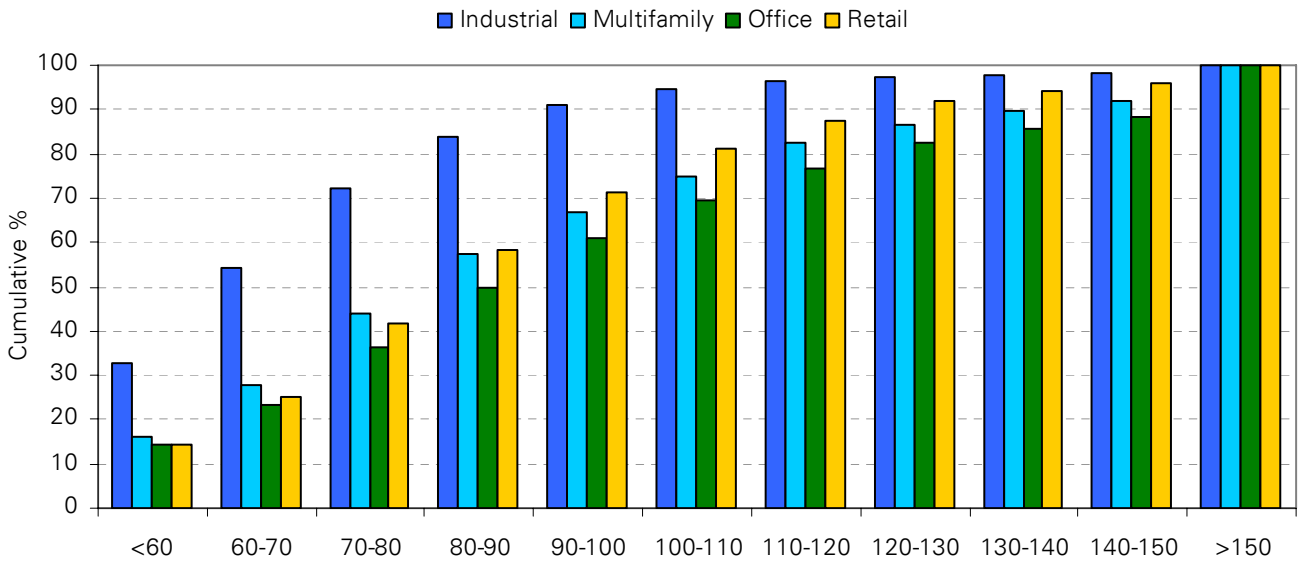
Figure 24: Cumulative Distribution of Maturity LTVs by Origination Vintage: Moderate Stress Scenario



Source: Deutsche Bank

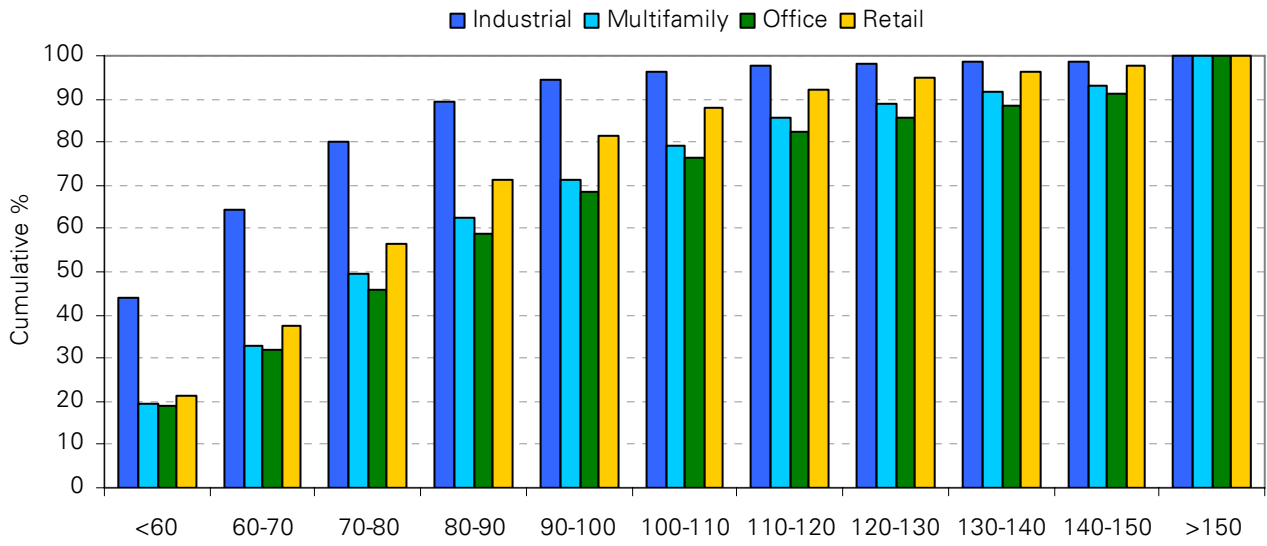
Finally, Figures 25 and 26 provide the same information as Figures 23 and 24, except the data is stratified by property type. These two figures indicate clearly the degree to which loans on office, multifamily and retail were over-leveraged relative to loans on industrial.

Figure 25: Cumulative Distribution of Maturity LTVs by Property Type: Severe Stress Scenario



Source: Deutsche Bank

Figure 26: Cumulative Distribution of Maturity LTVs by Property Type: Moderate Stress Scenario



Source: Deutsche Bank

V. A Look at Commercial Real Estate Problems in Bank Portfolios

It is difficult to conjecture about how the problems in CMBS may unfold without considering, in some detail, the situation of commercial real estate loans in bank portfolios. In fact, we believe that commercial real estate problems in banks are likely to have a dominant impact on CMBS, and the rest of the commercial real estate debt markets as well. There are several reasons for this. First, commercial real estate exposure in bank portfolios is enormous, much larger than the CMBS market. Second, we believe that commercial real estate loans in banks are, on the whole, at least as risky, and possibly significantly riskier, than those in CMBS. And third, extreme stress is likely to develop in bank commercial real estate loans well before it does in CMBS loans.

In aggregate, banks have approximately a \$1.7 trillion exposure to loans classified as commercial real estate loans. This is comprised of about \$1 trillion of "core" commercial real estate loans, \$532 billion of construction and land development loans and \$150 billion of multifamily loans. Moreover, their commercial real estate exposure represents more than 25% of total assets. Importantly, this exposure increases markedly for smaller banks. For the four largest banks (on the basis of total assets), this exposure is 12.3%, for the 5-30 largest banks, the exposure is 24.5%, while for the 31-100 largest banks, the exposure grows to 38.9%.

Below, exposures for both construction and core commercial real estate loans are presented separately for four different size categories of banks (where size is based on total assets):

- Category 1: Banks 1-4
- Category 2: Banks 5-19
- Category 3: Banks 20-50
- Category 4: Banks 51-97

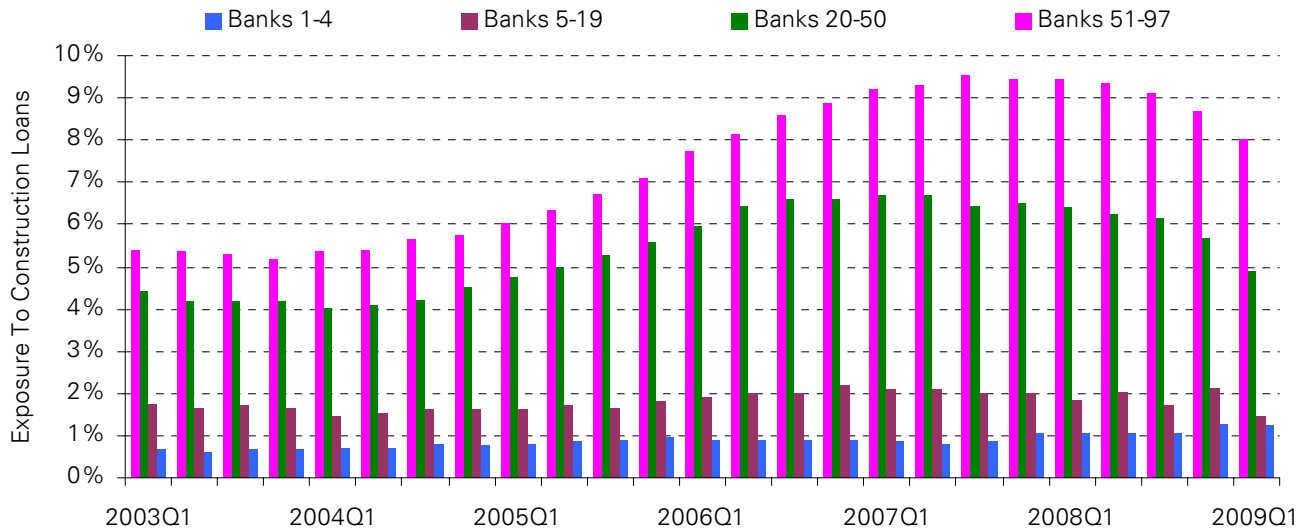
Category 1 represents the largest money center banks; category 2 represents the super regional and large regional banks; category 3 contains average size regional banks having total assets in excess of \$25 billion; category 4 reflects smaller regional banks and larger community banks with total assets of \$10-\$25 billion.

Figure 27 presents the exposures, since Q1 2003, of the four categories of banks to construction and land development loans. The average exposure in recent years has been about 1% for the four largest banks, but 8-9% for banks 51-97.

The story is similar for core commercial real estate loans. Figure 28 presents the data. The exposure of the largest banks has averaged only about a 2% over time, while that of the 51-97 largest banks has been in the 15% range.

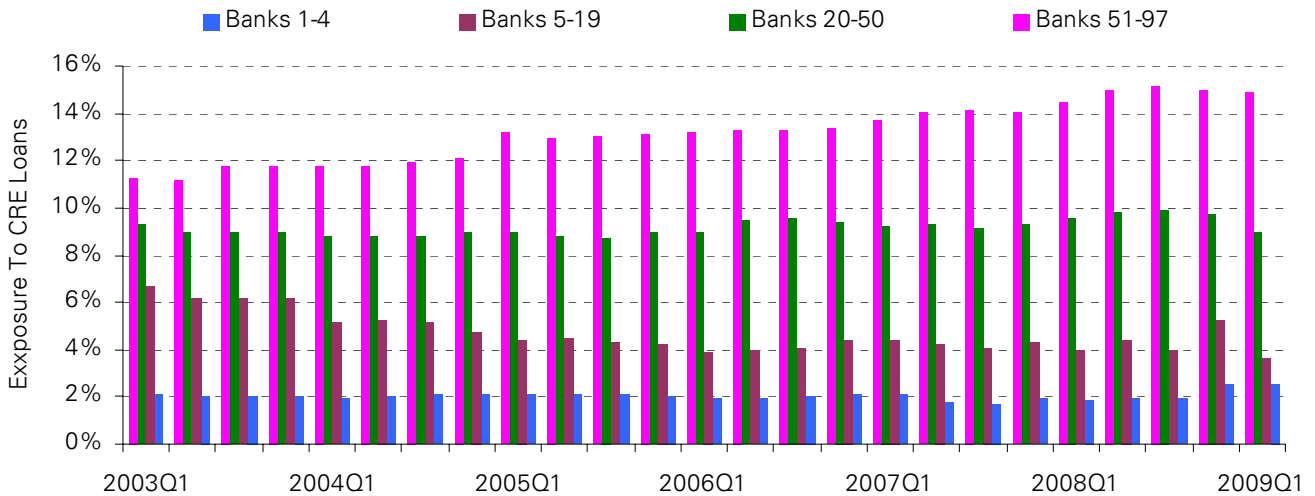
One other interesting observation is that construction loan exposure appears to have been declining over the past 18 months or so, while commercial real estate exposure has been increasing. This is particularly noticeable for the 51-97 largest banks. We conjecture this reflects construction loans on completed projects being transferred to the commercial real estate category, perhaps via mini perm loans or other bridge financing. To the extent that this is the case, the commercial real estate exposure could entail significantly greater risk.

Figure 27: Bank Exposure to Construction and Land Development Loans



Source: Deutsche Bank and SNL Financial

Figure 28: Bank Exposure to Core Commercial Real Estate Loans



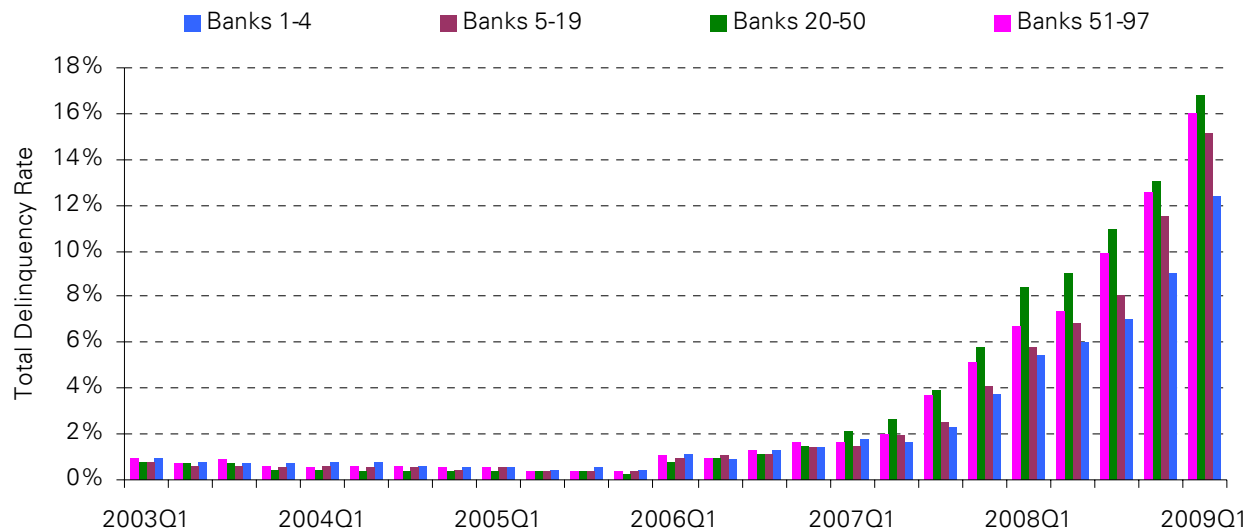
Source: Deutsche Bank and SNL Financial

In terms of risk, construction and land development loans are, without doubt, the riskiest commercial real estate loan product. The credit risk is so significant that they were never deemed appropriate for CMBS and, in fact, there was very little incidence of them appearing.

Values for properties with vacancy issues are down by enormous magnitudes in today's environment, as recent sales of distressed office properties in Manhattan have made it abundantly clear. Properties under construction, or newly completed properties, are the poster children for properties with vacancy issues. Values here must be down by extremely large percentages. As a result, loss severities on defaulted construction loans will be extremely high, possibly as high as 75%, or more.

Construction loans in bank portfolio are already exhibiting surging delinquency rates. Figure 29 presents historical total delinquency rates (i.e. 30+) for construction loans, again broken out by bank category.

Figure 29: Total Delinquency Rates (30+ Day Delinquency) for Construction Loans in Bank Portfolios



Source: Deutsche Bank and SNL Financial

Total delinquency rates have reached 12% for the largest banks and 16% for regional banks. While this is certainly an appalling number, we believe it vastly understates the true magnitude of the problem. The reason is that construction loans are almost always structured with large upfront interest reserves that are sufficient to pay the interest on the loan during the construction period, typically two to three years. Moreover, as construction loans are typically floating rate loans, and short-term interest rates have plummeted since 2007, the cost of debt service has declined significantly. Therefore, the interest reserves in construction loans may actually be sufficient to carry the loans for another 12-24 months. However, eventually interest reserves, and time, will run out on these loans and at that point we expect to see a massive wave of defaults.

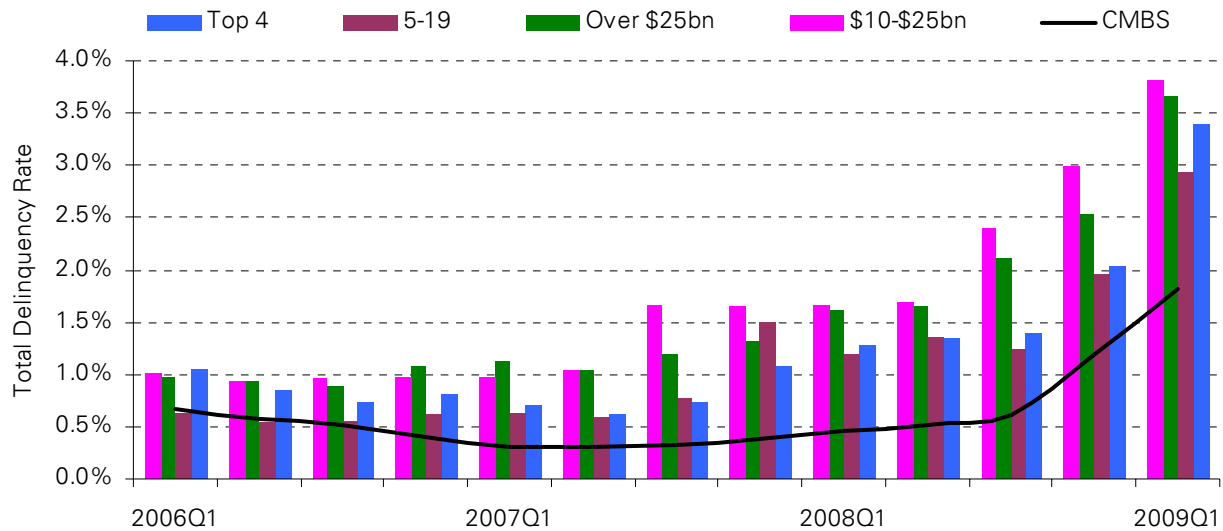
In our view, ultimate losses on construction loans are likely to be at least 25%, and possibly much more. This would imply losses of at least \$130 billion on construction loans in bank portfolios.

Turning to core commercial real estate loans in bank portfolios, our view is that this segment is at least as risky as the fixed rate CMBS sector, and probably significantly more risky. Our view is based on the following points:

1. First, the CMBS market grew dramatically over the past few years, from \$93 billion in issuance in 2004, to \$169 billion in 2005, to \$207 billion in 2006 to \$230 billion in 2007. Much of the growth in market share came at the expense of banks, as CMBS siphoned off many of the desirable loans on stabilized properties with extremely competitive rates. Banks, funding themselves at L-5bp simply couldn't compete on price terms given the execution that was available in CMBS at the time. This forced banks, particularly regional and community banks, into riskier lines of commercial real estate lending, like condo conversion loans.

2. Because of their liability structure, bank commercial lending has always tended to focus more on shorter term lending on properties with some transitional aspect to them—properties with a business plan. Such transitional properties typically suffer more in a downturn as the projected cash flow growth fails to materialize.
3. Because bank loans typically have three to five year terms, a very large percentage were originated at the peak, 2005-2007, and will mature at the trough of the downturn, 2011-2012. Most CMBS loans originated during the 2005-2007 period mature during 2015-2017.
4. The view that core commercial real estate loans in bank portfolios are at least as risky as loans in the fixed rate CMBS sector gains support by the fact that delinquency rates on the former have consistently been significantly higher than those on CMBS loans. Figure 30 compares historical total delinquency rates for the four categories of banks to that of CMBS. The total delinquency rate on bank loans have typically been two to three times higher than that on CMBS.

Figure 30: Total Delinquency Rates: Bank Commercial Real Estate Loans Vs. CMBS



Source: Deutsche Bank and SNL Financial

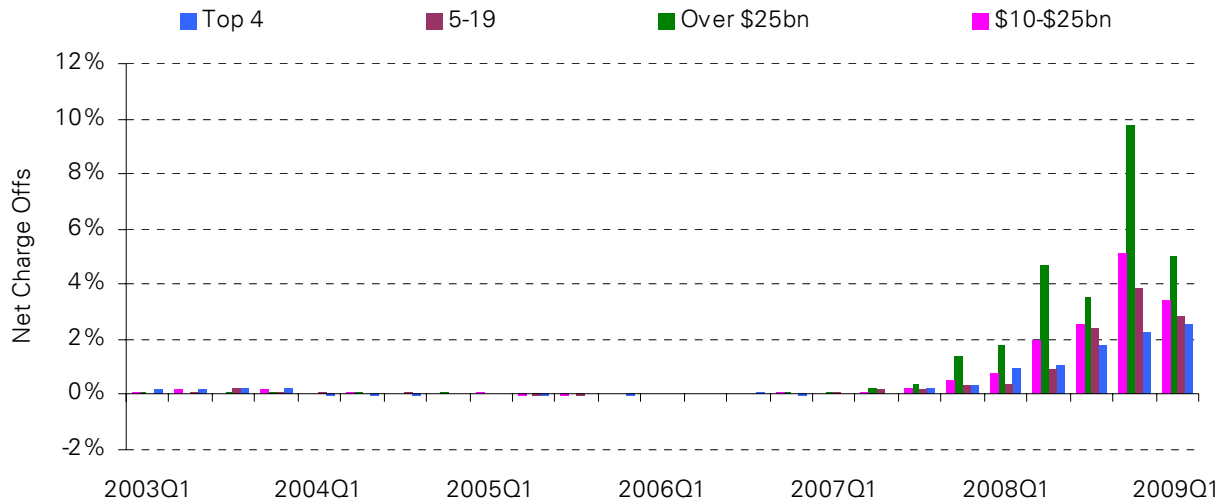
Because of the reasons outlined above, we believe it is reasonable to expect that total losses on bank core commercial real estate loans will be at least as large as those on CMBS loans originated during the same period. From Figures 9 and 10, this suggests losses in the ranges of 11.6% - 15.3%, or roughly \$115 - \$150 billion.

Thus, our estimate of losses for banks from the combination of construction and core commercial loans alone is \$250 - \$300 billion. This excludes losses from multifamily loans, which, admittedly, should be much lower given the size of the exposure.

Finally, looking at the net charge offs that have already been taken by banks, the cumulative (since Q1 2008) net charge offs for construction loans ranged from a high of 25% for Category 3, to a low of 8.7% for Category 1. See Figure 31. It appears as though banks have a long way to go in charging off reasonable amounts for construction loans.

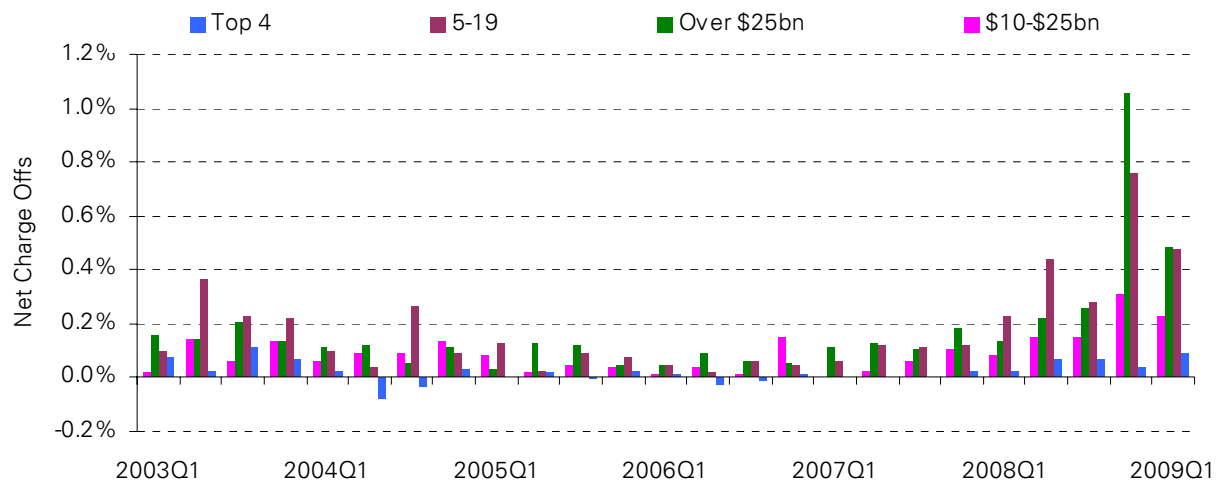
However, the situation is far worse in core commercial real estate loans, where we expect to see 11.6% - 15.3% total losses. Here, cumulative net charge offs since Q1 2008 range from a high of 3.2% to a low of 0.3% (for the large money center banks).

Figure 31: Bank's Net Charge Offs for Construction Loans



Source: Deutsche Bank and SNL Financial

Figure 32: Bank's Net Charge Offs for Core Commercial Real Estate Loans



Source: Deutsche Bank and SNL Financial

For both construction and core commercial real estate loans, net charge offs to date have been highly inadequate. This is clearly a problem that is being pushed out into the future.

In our view, banks will, once again, be at the epicenter of the commercial mortgage crash, just as they were in the early 1990s. Within the banking sector, we believe that smaller regional and community banks are likely to suffer disproportionately. The way in which regulators respond to this crisis will be a key determinant of how long the commercial real estate market remains mired in these problems. If banks are allowed bury problem loans away in their portfolios for years via massive term extensions, this is likely to a very long process. If, on the other hand, banks (and CMBS special servicers too, for that matter) are required to deal with problems in a timely manner, the process, which will be unavoidably painful, is likely to be much shorter duration.

V. Conclusions

Our updated analysis continues to suggest that the majority of CMBS loans that survive until maturity will fail to qualify to refinance without major equity infusions. However, by introducing term defaults into the picture in an internally consistent way, we conclude that a significant proportion of loans of loans (15-20%) are expected to default prior to maturity.

Our estimates of total losses, at 9-12% for the outstanding CMBS universe as a whole, and 11.6-15.3% for the more recent vintages (2005-2008), suggest that the intensity of the current commercial real estate crash may eventually exceed that of the early 1990s, possibly by a significant degree.

Banks, in particular, look vulnerable, especially smaller regional and community banks that have very high exposures to highly toxic construction and land development loans. We expect that they will, once again, mark the epicenter of commercial real estate problems.

Appendix 1

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