

Commercial Mortgage Default and Refinancing Risk: *A Primer*

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During the period from 1993 to 2006, commercial mortgages and commercial mortgage-backed securities (CMBS) provided highly competitive risk-adjusted returns relative to other investments in the stock and bond universe (Xu [2007]). But the severe 2007–2009 financial market meltdown, induced by the downturn in the housing sector and the bursting of the housing bubble, presents a stiff challenge to the continuation of previously strong results. In this article, we examine the historical performance of commercial mortgage defaults and seek to draw inferences about defaults in the unusual 2007–2009 U.S. economic downturn. The article is also intended for use as a primer for investors who are considering relative value in the sector at a bottom-of-the-cycle moment when relative value is typically high.

COMMERCIAL MORTGAGE RISK THEN AND NOW

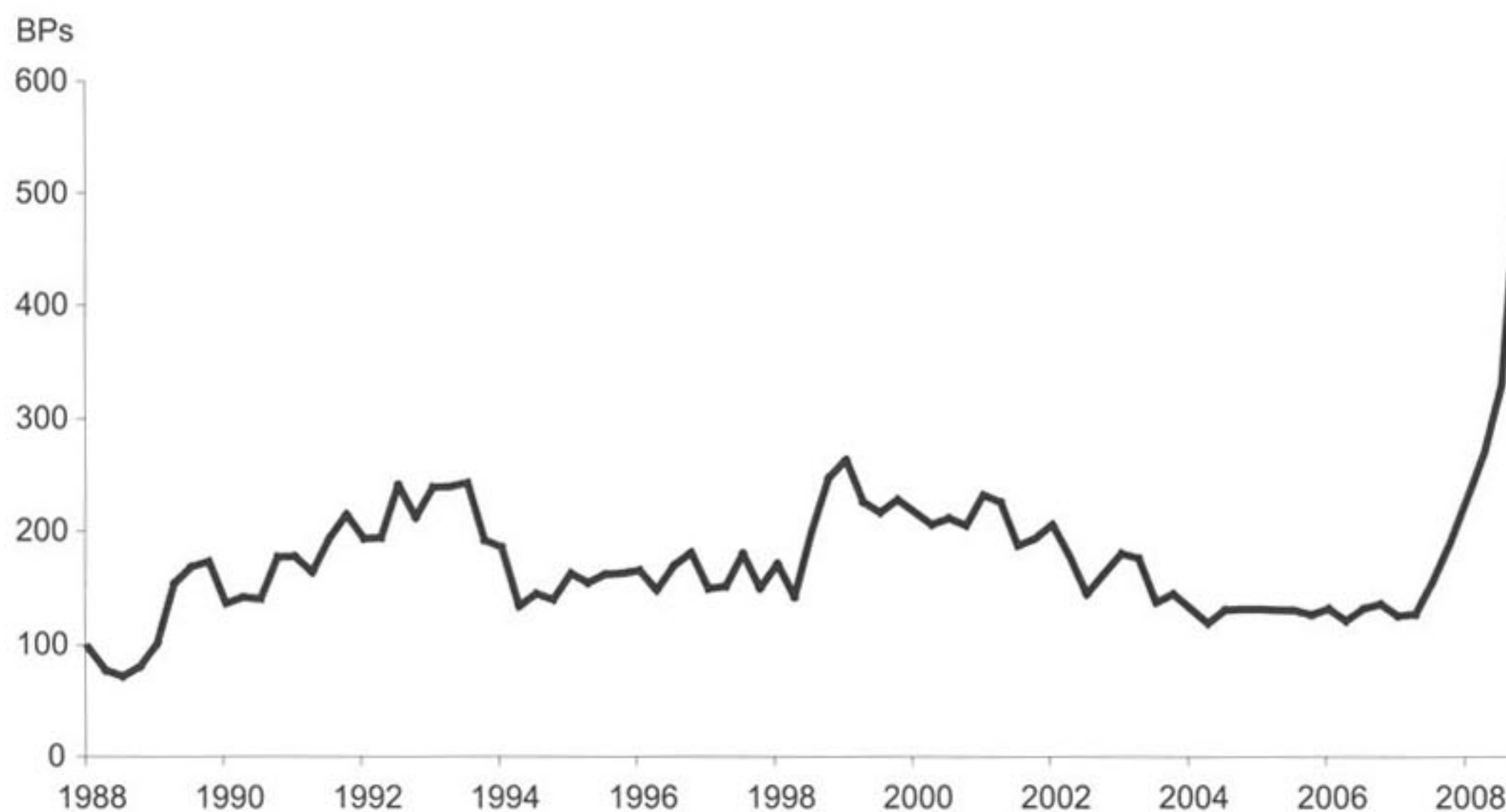
Commercial mortgages are in their toughest ever financing crunch! Between mid-2007 and 2009, the CMBS market was effectively closed to new loans for the first time since the new-loan market began in 1993 and 1994. Banks and life companies, battered by losses in home mortgages and home mortgage securities, sharply pulled back all private lending, including lending for commercial real estate.

The extent and severity of the credit shutdown in commercial mortgages is somewhat reminiscent of the early 1990s pullback in insurer and bank real estate lending. As shown in Exhibit 1, the result has been an unprecedented widening in whole-loan lending spreads. What has been different in the 2007–2009 period compared to the early 1990s is the much wider scope of the credit crisis. The 2007–2009 crisis was precipitated by a downturn in the post-2000 housing bubble, leading to the destruction of commercial and investment bank capital, the near meltdown of the financial system, and continuing unprecedented actions by the U.S. Federal Reserve and the U.S. Treasury. By contrast, the commercial real estate problems in the early 1990s stemmed from a bubble in the much smaller commercial property sector, accompanied in the 1980s by a large number of savings and loan (S&L) failures, but with much smaller macroeconomic impacts (Corcoran [1987]).

Defaults on commercial mortgage loans in the late 1980s and early 1990s brought large losses to insurance companies and banks, but not to Wall Street investment banks. As a result, investment banks were in a good position to fill in the “capital gap” by creating the CMBS market. Securitization saved the market, in part by creating the ability to spread risk throughout the financial system via a network of new investors. The diffusion in risk accounted for much more widespread losses in the 2007–2009

EXHIBIT 1

Commercial Mortgage Lending Spread (spread to 10-year Treasury)



Source: Giliberto-Levy lending survey.

period for insurers, commercial banks, mutual funds, hedge funds, and investment banks.

In such episodes, the pullback in commercial mortgage lending at the cyclical bottom creates opportunities to invest in strongly underwritten new loans and to buy older loans at highly discounted prices. In 2008 and 2009, the unprecedented response by the Federal Reserve and the Treasury to recapitalize banks and support the market for home mortgages has hopefully set the stage for restarting the flow of credit. Although the exact shape of the financial landscape is still being clarified, we are observing private sector initiatives to alleviate the credit shortage in commercial real estate.

In the 1980s, an overbuilding boom was centered in, and largely confined to, commercial properties. Sharp price declines of 30% to 50% in the early 1990s were registered in office, shopping center, apartment, and warehouse properties due to the confluence of a pricing bubble, 1980s overbuilding, and an environment of restricted credit and depressed liquidity. Much of the decline in property values stemmed from increases in cap rates, shown in Exhibit 2, from 6% to the 9%–9½% area in the four core (lower-risk) property types. Despite the success of the CMBS market in alleviating the immediate early 1990s credit crunch, property cap rates remained at very high historical levels for much of the 1990s. In our view, cap rates persisted at these very high levels because investors

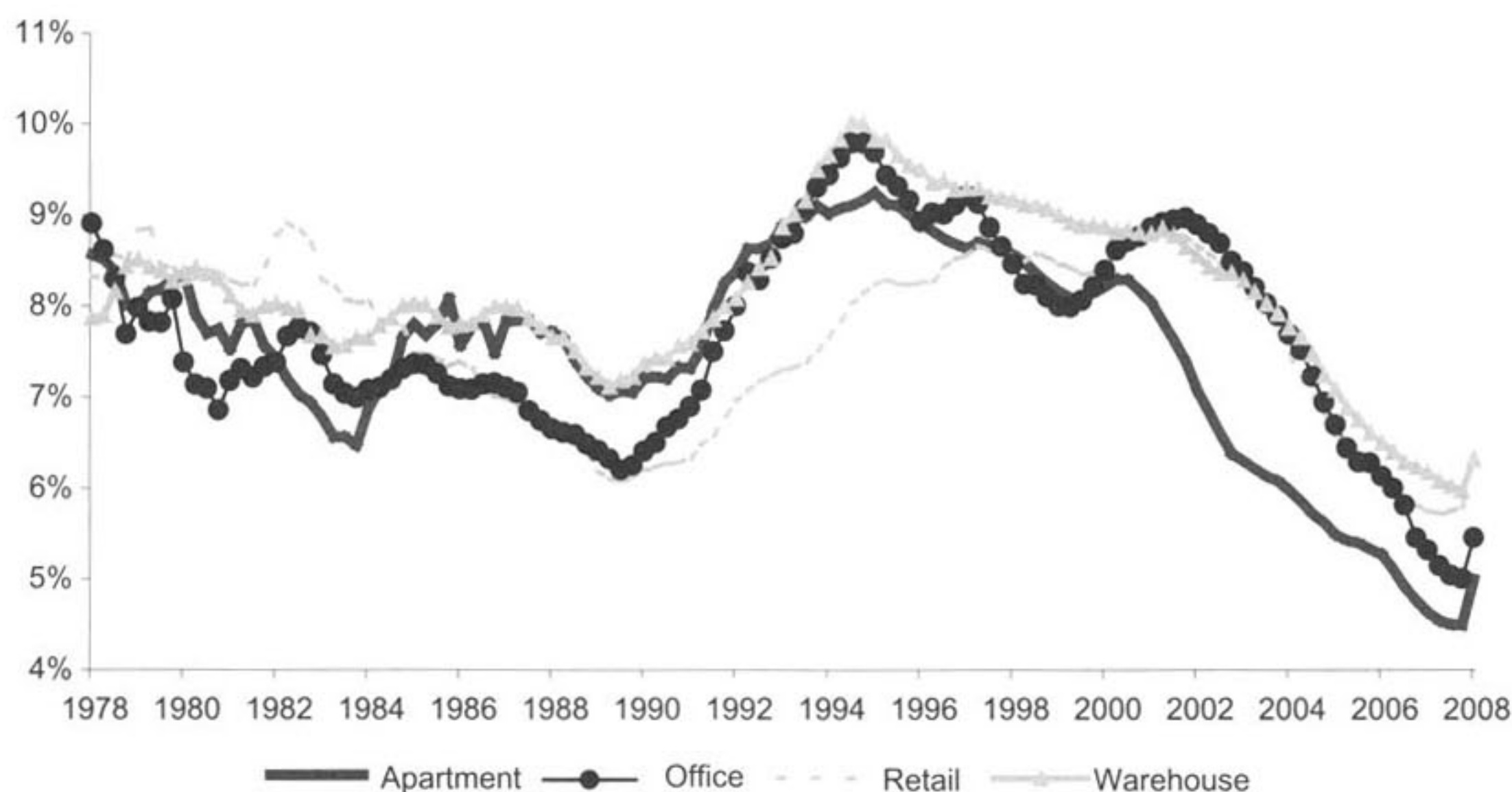
saw 1980s overbuilding as a continuing fundamental risk to the sector.

Over the 2007–2009 period, cap rates rose again and REIT stock prices fell sharply, especially in late 2008. There is much concern that the dramatic withdrawal of credit will continue to push up cap rates to early 1990s levels, triggering more loan defaults. Unlike the 1990s, however, the much wider arc of the 2007–2009 credit crisis means that the private sector in general—not just commercial properties—is also vulnerable to the scarcity of credit and lending. In the early 1990s, the response of commercial mortgage defaults to declining property prices reflected the consistently very weak underwriting of 1980s loan vintages. As these 1980s loans defaulted, they amplified the decline in property prices by creating a large number of distressed properties for sale.

In the current episode, the vulnerability of commercial mortgage loans is arguably more selective. For example, mortgage loans that were originated in 2006 and 2007 were weakly underwritten, but loans originated in the 1993–2004 vintage years were typically strongly underwritten. The stronger underwriting was reflected in very low commercial mortgage delinquency rates at life insurers over the period 2000–2008, as shown in Exhibit 3. Construction loans are a source of higher risk as was the case in the 1980s overbuilding boom and in the current episode. Because commercial property

EXHIBIT 2

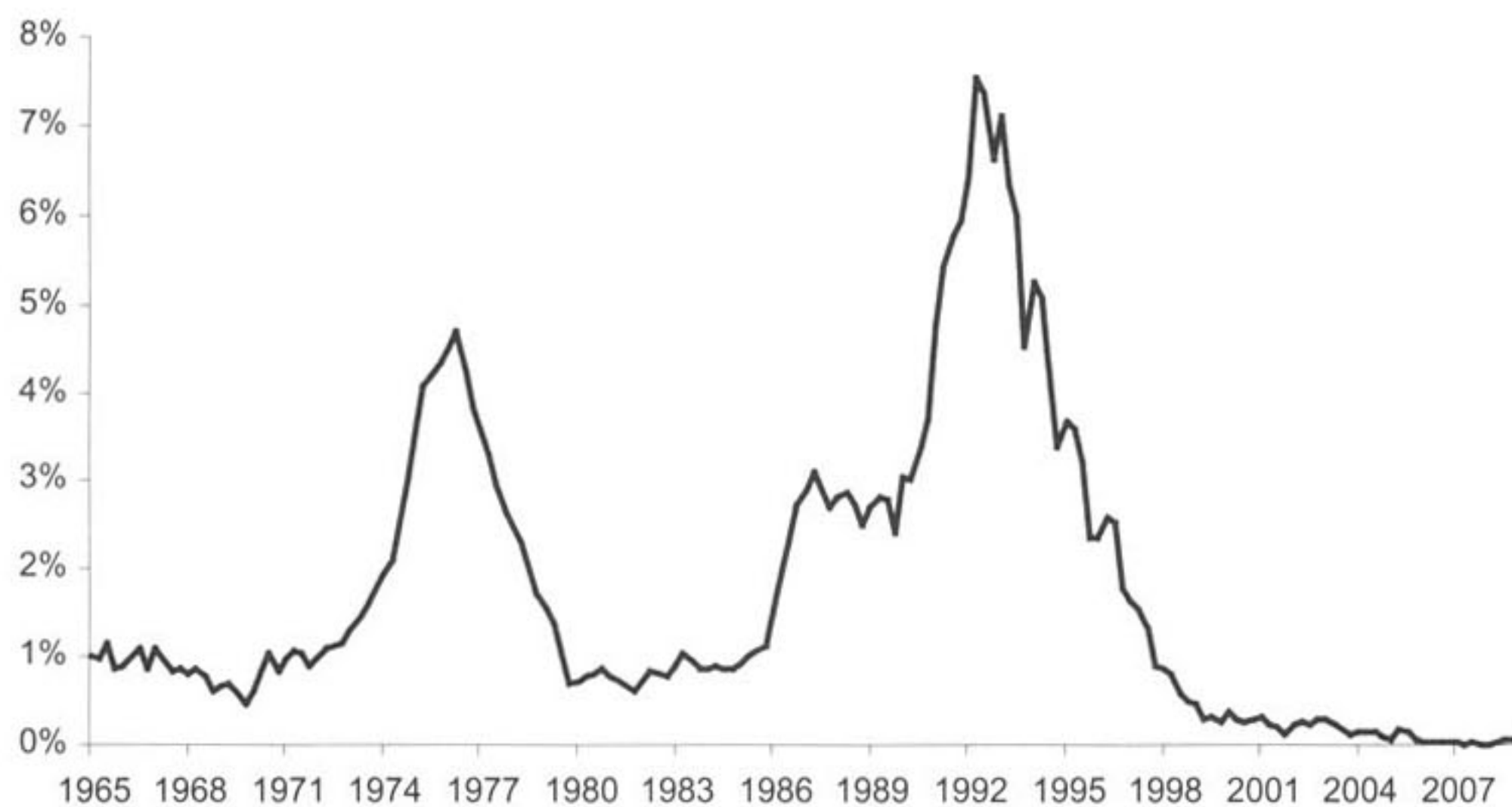
Cap Rates on Core Property Types



Source: NCREIF

EXHIBIT 3

Commercial Mortgage Delinquency Rates



Source: ACLI.

overbuilding was the norm in the 1980s, widespread defaults on construction loans over the period were concentrated in commercial properties. During the 2007–2009 credit crunch, many of the delinquent loans at banks were also construction loans, but were primarily for residential home construction and residential land development. Construction loans as a whole have a higher default rate

as it matches their higher risk profile, which will be discussed in the next section.

In 2008 and 2009, CMBS and CMBX¹ bond spreads have been at historically wide levels, and the views about commercial mortgage defaults implied in cash bond and derivative pricing are extremely pessimistic. The “implied” level of defaults greatly exceeds the record high defaults

for commercial mortgage lending experienced in the 1980s (Exhibit 4) and are in stark contrast to the low delinquency rates preceding the 2008–2009 recession. In 2007 and the first half of 2008, CMBS loan defaults were less than half of 1%, and commercial mortgage delinquencies at both banks and life companies were even lower. Even in “normal” markets, defaults implied by cash bond prices have tended to overstate actual default experience (Hull [2005]). Not surprisingly, this tendency appears to be amplified substantially in today’s bear market setting.

Historical downturns in commercial property and stock markets that do not feature 1980s-style overbuilding can also be analyzed for relevant comparisons to the current situation. An interesting case is 1974, a year that was preceded by the almost six-fold increase in the price of oil in 1973. At that time, Americans used more than two times the energy per capita as they use today. Between the early 1974 peak in stock prices and the autumn 1974 low point, the stock market fell about 34%.

The early 1970s was a period in which the dollar fell steadily against major currencies, after the delinking of the Breton Woods dollar–gold relationship in 1970. Then, as now, the weak dollar was linked to persistent large trade deficits and large scale and protracted military involvement overseas. Declines in commercial property prices (outside of Texas) resulted in a sharp increase

in the commercial mortgage delinquency rate at life insurers (see Exhibit 3). With an absence of generalized overbuilding, the 1973–1974 oil shock and property price declines produced an upsurge in commercial mortgage defaults that was much less protracted than the defaults in the early 1990s and perhaps only 45% to 55% of the cumulative size of the early 1990s episode.

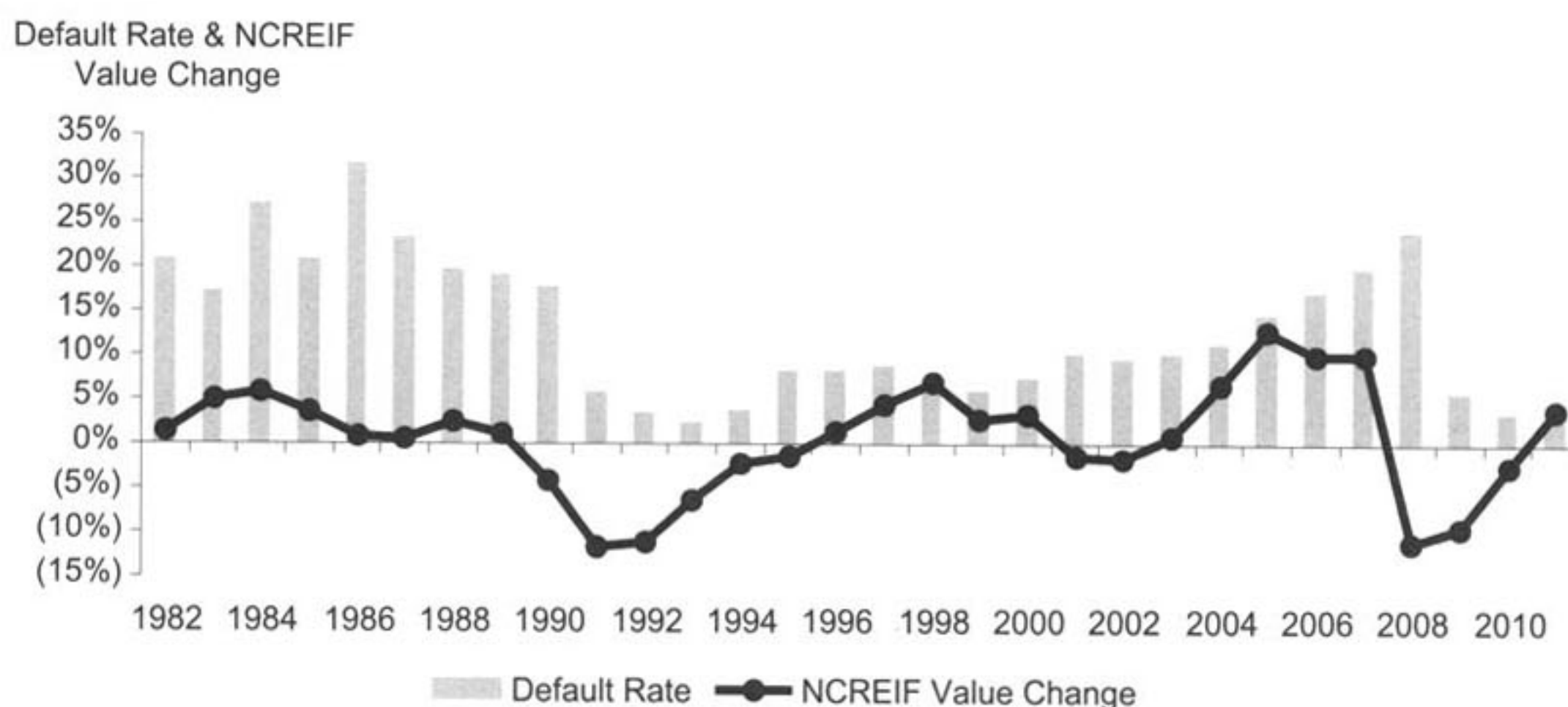
SLICING AND DICING RISK IN COMMERCIAL MORTGAGES

As a result of the 1980s overbuilding boom in commercial properties, lenders and investors learned a lesson. Underwriting in commercial mortgages became much tougher and remained quite stringent in the years from 1993 to 2004. With property values often far below replacement cost in the early and mid-1990s, construction activity dried up. But as space demands gradually recovered during the 1990s, property cash flows and rents rose accordingly.

The result was that commercial mortgage loans that were originated in the 1993–2004 vintage years had very low default rates. Exhibit 4 shows core loan lifetime default rates by year of origination, or vintage, in commercial mortgage loans. These default rates were first estimated by Snyderman [1991], and subsequently extended by Esaki, L’Heureux, and Snyderman [1999] as well as in a

EXHIBIT 4

Commercial Mortgage Lifetime Default Rates and Property Value Changes



Note: Default data for vintage years beginning in 2001 include both actual defaults and projections from PPR’s Compass model. FitchRatings default data 1993–2000 have been adjusted to ensure comparability with defaults estimated from Esaki, L’Heureux, and Snyderman [1999].

Sources: NCREIF; Giliberto-Levy; Esaki, L’Heureux, and Snyderman [1999]; FitchRatings [2008a]; PPR.

number of rating agency studies of CMBS mortgage loan defaults; for example, see FitchRatings [2008a]. Particularly striking are the high lifetime defaults for core loans in the top-of-the-cycle 1984–1990 vintage years followed by very low lifetime default rates in the bottom-of-the-cycle 1991–1994 vintage years. Default rates remained at modest levels between 1995 and the early 2000s. Snyderman [1991] noted substantial variation in life company lender default rates in the 1980s overbuilding boom, thereby highlighting substantial returns to lender underwriting.

In addition to loan vintage years, other distinctions can be made across commercial mortgage loans for risk purposes. For example, core commercial mortgage loans in office, retail, apartment, and industrial properties have experienced lower defaults than a variety of smaller asset classes that have higher default risk. As shown in Exhibit 5, multifamily loans were on the high side of other core loan categories. In part, this indicates the contribution to weaker underwriting by government-sponsored enterprise (GSE) lending programs, such as Fannie Mae and Freddie Mac, which competed with portfolio and securitized lenders. In addition, some analysts believe multifamily to be a “safer” sector than the other core categories and ignored obvious signs of overbuilding in the years 2002–2006. Also shown in Exhibit 5, hotel and health care property

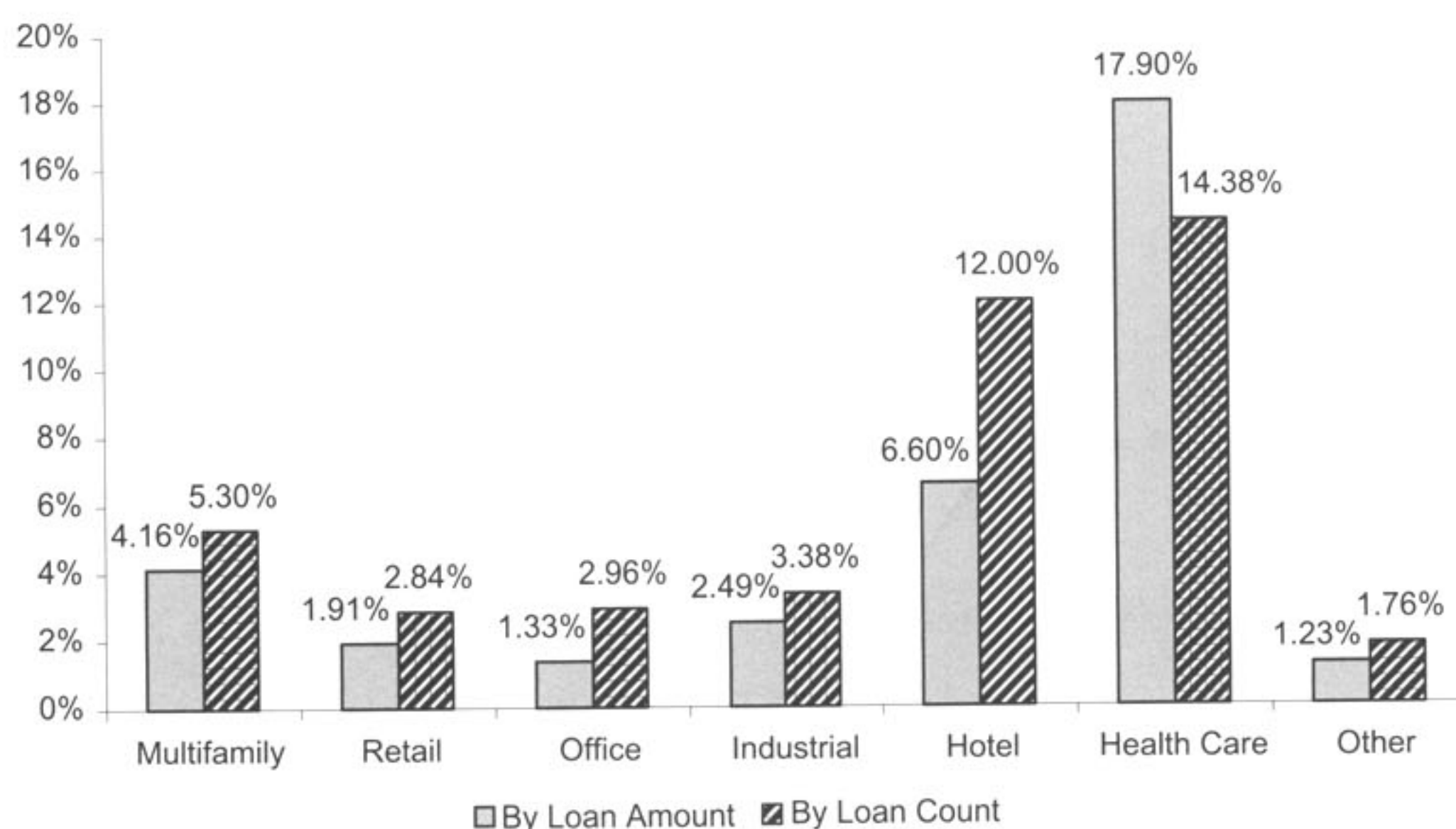
loans experienced substantially higher defaults over the entire period 1993–2007. In general, CMBS deals in the 1990s included more hotel and health care property loans, and CMBS deals after 2000 had fewer of these loans.

It is also useful to distinguish between larger and smaller commercial mortgage loans. In the years 1993–2004, FitchRatings data indicate that larger commercial mortgage loans (those with a \$25 million or greater initial loan balance) had fewer defaults than smaller loans. During this period, defaults for large loans were only about 20% of the small-loan default rate. This relationship is evident, although indirect, as shown in Exhibit 5, which reports that default rates calculated by number of loans are higher than default rates calculated by dollar balances. In addition, according to Moody’s, there was a similar concentration in loan defaults grouped by geographical locations. Specifically, a disproportionate number of loan defaults were concentrated in smaller metropolitan statistical areas (MSAs) while loans in larger MSAs had lower default rates.

Part of the reason for the relatively low default rates of large loans that were originated over the 1993–2004 period is enforcement of stringent investor “position limits” for individual loans and names. Wariness in the 1990s about larger loans was reflected in the segregation of CMBS deals into larger and smaller loan deals. After 2000, when CMBS

EXHIBIT 5

CMBS Loan Defaults by Property Type



Source: FitchRatings [2008a].

“fusion” deals—combining large and small loans—became the norm, relatively tough underwriting of large loans was initially maintained by subdividing large whole loans into A and B notes. The subordination of the junior B note provided additional protection to CMBS investors in a deal that included the A note as collateral. The A and B notes were often “shadow rated” by the rating agencies, giving investors additional comfort.

Beginning at the end of 2004, however, securitizers began to underwrite large loans on the basis of the entire whole loan rather than the A/B note structure. The collapse in the previous more stringent underwriting standards for large loans coincided with a general erosion in underwriting standards for both large and small loans. As shown in Exhibit 6, the share of loans that were structured with some length of interest-only period increased dramatically from 2004 to 2007. Other underwriting terms also weakened during this period. Because large loan underwriting converged toward small loan underwriting, more erosion in underwriting standards can be observed in measures that weight the deals by dollar balance rather than loan count.

The weakening of large loan underwriting reflected the pervasive influence of the 2004–2007 credit bubble. In particular, because rating agencies maintained a relatively tough view on commercial real estate, generally limiting REIT debt issuance to an effective debt-to-property

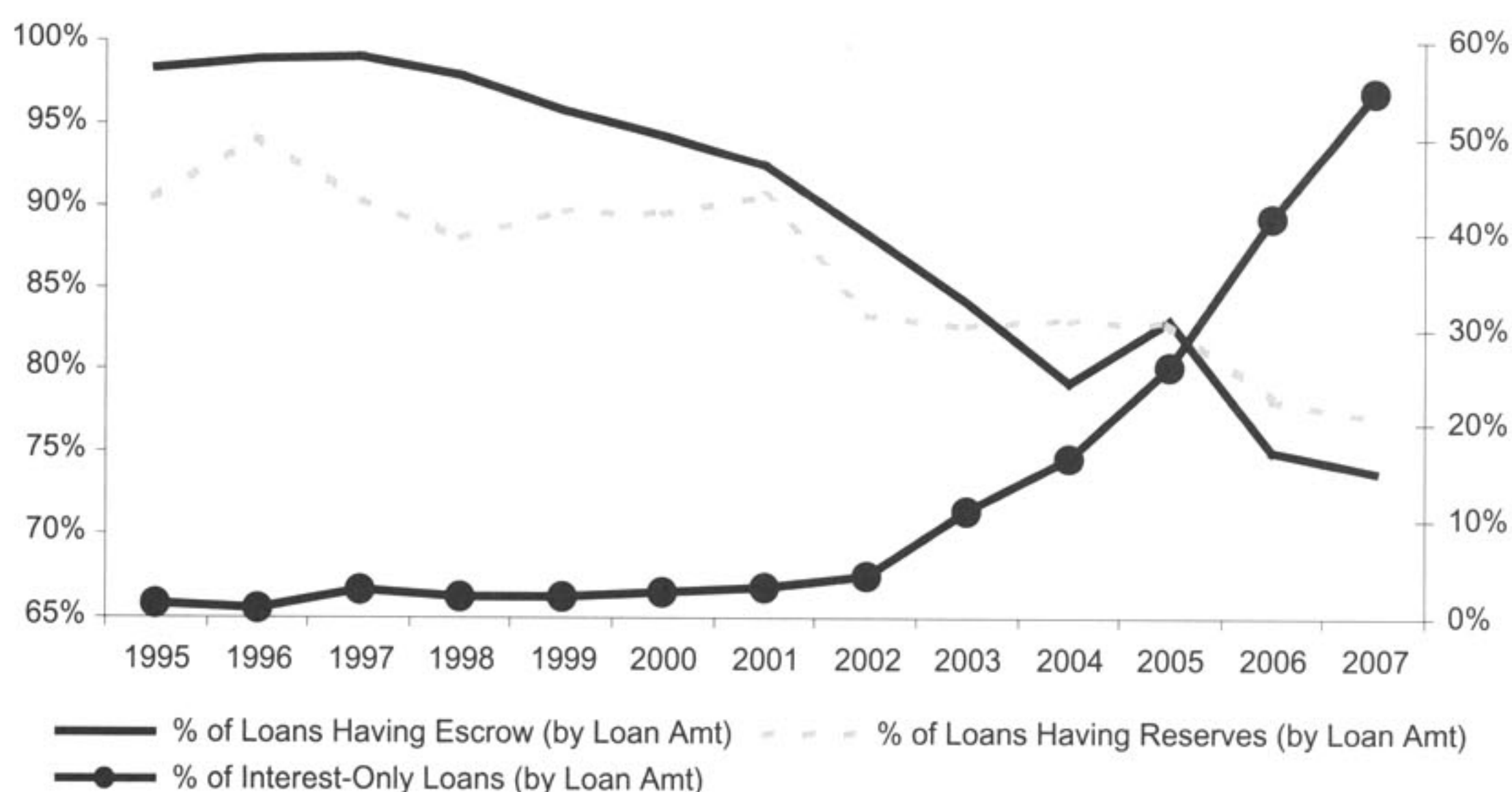
value ratio of about 50%, pressure began to grow to take REITs private. In the private market, properties could be financed using commercial mortgages with a loan-to-value ratio of 85% or more. From 2004 to 2007, a large and increasing part of commercial mortgage issuance, mostly securitized in CMBS, was related to the refinancing of properties acquired from former REITs.

Commercial mortgage loans can be distinguished by type of lender and by whether the loan is secured by an already-built, leased-up property or is a construction loan. The CMBS market dominated commercial mortgage lending from 1994 to 2007. Lower delinquency rates, in general, for loans made by banks and life insurers compared to those of CMBS loans suggests that, on average, underwriting standards were tougher at banks and life insurers and lower defaults on these loans should be expected. Just a reminder, these are commercial mortgage loans on already-built properties—not construction loans.

Higher risk for construction loans stems from the much higher volatility in the value of undeveloped (or partially improved) land. Because the valuation of unimproved or partially improved land is tied to valuing the “option” to develop the property, the construction loan that finances these improvements is also subject to higher volatility; see Geltner, Miller, Clayton, and Eichholtz [2007]. Exhibit 7 shows the “exercise value” of the option to develop a tract of land into a \$10,000,000 shopping

EXHIBIT 6

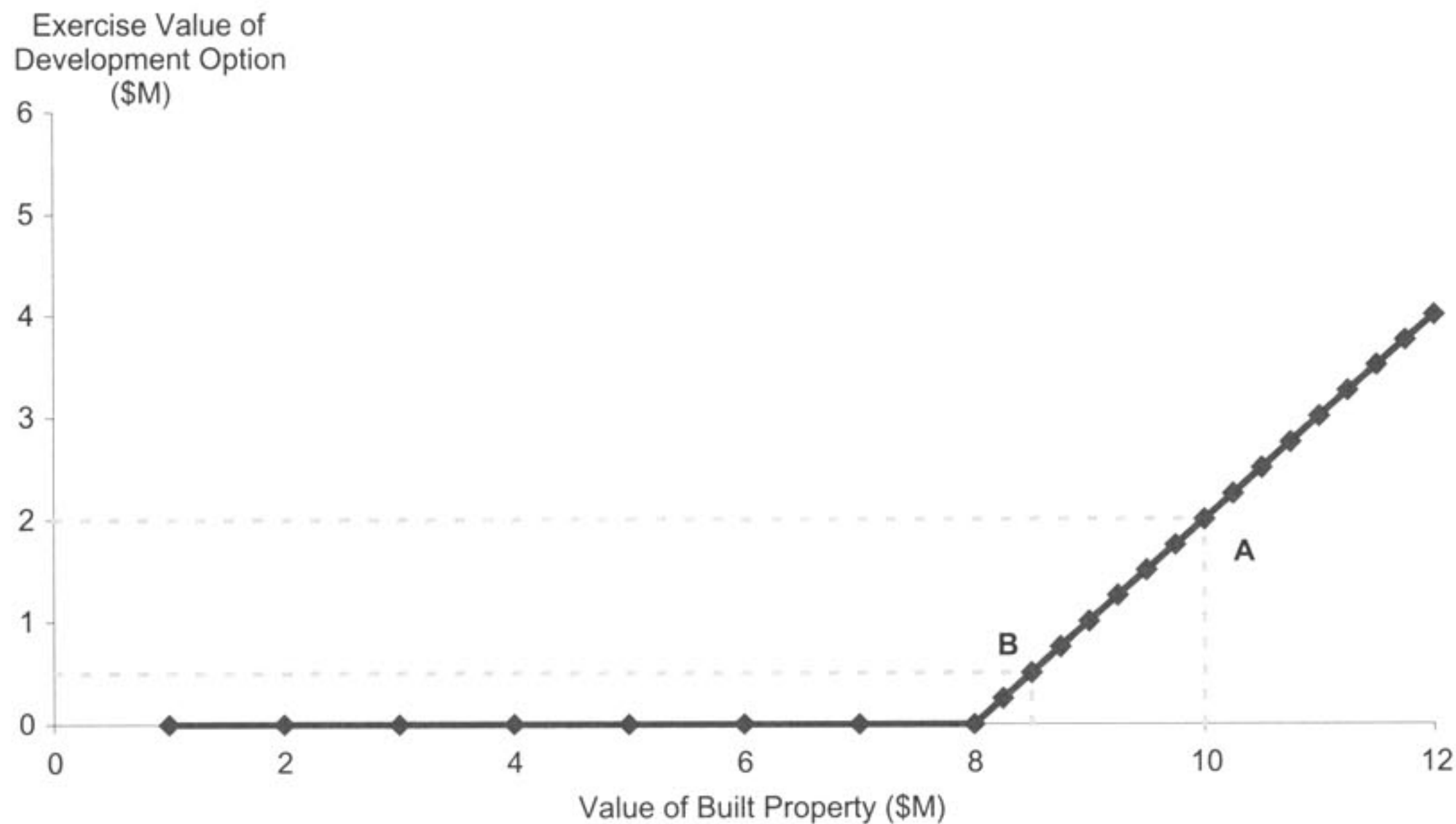
CMBS Underwriting Trends



Source: Trepp.

EXHIBIT 7

Value of Development Option on Unimproved Land



center (point A). Because the developer's cost is \$8,000,000, the development option—which underlies the value of the unimproved land—is initially \$2,000,000 “in the money.”

Now suppose that the price of built shopping centers drops 15% from \$10,000,000 to \$8,500,000 (point B). The developer's option is now only \$500,000 in the money; there will be a sharp drop in new development activity. Further, since the development option is the big driver in undeveloped and partially developed land values, the (exercise) value of the unimproved land drops from approximately \$2,000,000 (\$10,000,000 minus \$8,000,000) to only \$500,000 (\$8,500,000 minus \$8,000,000), a drop of 75%!

From a more practical perspective, Exhibit 7 might correspond to the situation of a shopping center developer who has only a small portion of the space pre-leased. If rental and asset markets shift dramatically against the project within the construction period, as just described, the developer may be caught in the middle with a half-finished center and much diminished leasing-income prospects. If the developer abandons the project, the construction lender will be the owner of an unfinished center in a very weak space market.

Exhibit 7 might also illustrate the situation of a housing developer who secures a construction loan to build roads, water, sewer, and electrical services to individual lots in a new housing development. The developer

plats and grades the individual lots that are to be sold to homeowners who will work with another builder to construct the homes on the lots. The “take-out” for the housing developer's construction loan is the gradual sale of lots to individual homebuyers. But if lot sales cease in a sharp housing downturn, the developer will be caught with unsold housing lots at sharply diminished values. For example, if the builder was building \$300,000 homes that fall in value to \$225,000, the lot values may fall from \$80,000 to \$20,000. If the construction lender ends up owning the housing development, the loss severity will again be substantial.

These examples illustrate the completion and lease-up risk inherent in construction loans that are not present in loans on already-built properties. As a result, default rates on construction loans are substantially higher than default rates on loans secured by already-built properties. Further, in the examples given, if the construction lender is forced to take back an unfinished project, the “loss severity” accompanying the loan default will likely be much higher than a normal loss on a loan secured by an already-built, leased-up property.

Normal loss severity for commercial mortgage loans (secured by an already-built property) typically falls in a range between 30% and 40% (Ciochetti, Lee, Shilling, and Yao [2004] and FitchRatings [2008b]). This loss rate is much lower than the average loss rate for corporate bond

EXHIBIT 8

Cumulative Defaults, Loss Severity, and Cumulative Loss

	Cumulative Default Loss	Severity	Cumulative Loss
Top of Cycle	22%	40%	8.8%
Bottom of Cycle	5%	30%	1.5%
Average	13%	35%	4.6%

Note: The default, severity, and loss figures are representative numbers.

defaults, which is around 60% (Moody's [2005]). Corporate bond defaults have a substantially higher loss severity because most are unsecured. By contrast, commercial mortgage loans, like residential mortgages, are secured by the commercial property itself, which explains the relatively low loss severity.

Much discussion of relative value in commercial mortgages and CMBS is couched in terms of losses rather than defaults. When we multiply cumulative defaults by loss severity, the result is the cumulative loss expected for a particular vintage year or loan pool. Exhibit 8 shows the representative estimates for cumulative default and loss severity to suggest the possible expected cumulative loss for loans originated at different points in the real estate cycle. The exhibit also allows for variation in both defaults and loss severity across the cycle. The top-of-the-cycle illustrative loss is about equal to that for the 1986 vintage year, the worst year of the 1980s. Exhibit 8 highlights the care that needs to be taken in assessing top-of-the-cycle real estate debt, such as 2006–2007 vintage loans, as well as the opportunities that are available in the strongly underwritten bottom-of-the-cycle vintage loans, such as those that will be originated in the years 2009–2011.

REFINANCING RISK IN 2009 AND 2010

What does all this say about refinancing risk in the years 2009 and 2010?

- With a severe pullback in lending, even very solid loans that would normally be easily refinanced may have a problem getting refinancing, that is, until more normal credit flows are restored.
- Commercial mortgage loans with roughly 10-year terms that were originated in the years 1998–2001 were strongly underwritten. For these loans there has been a substantial interval for both property cash

flows and values to improve and for original loan balances to amortize. Other things equal, these loans are in the strongest position to merit refinancing. In very tough lending environments, however, no one gets a free pass!

- Short-term commercial mortgage loans originated for the CMBS market in 2006 and 2007 suffer from weak underwriting—high initial loan-to-value (LTV) ratios, no amortization, and low debt-service coverage ratios (DSCRs)—and a top-of-the-cycle valuation. Many of these loans will likely need additional equity capital to make tough refinancing options in 2009 and 2010 work. In many cases, real estate owners will likely be unwilling to put in additional equity, which may then lead to default at the balloon date. Many shorter-term CMBS loans have extension options based on achieving contingent targets for cash flow and occupancy. Assuming a steep recession scenario, it will be difficult to achieve these targets, putting the loans at substantial risk of default at the balloon date.
- Commercial mortgages originated by banks and having 5–10 year terms could benefit from being pre-2005 vintage and from stronger bank underwriting. Other commercial mortgages from 2006 and 2007 vintages may not fare much better than short-term CMBS loans.
- A very large \$450 billion slug of CMBS loans was originated in 2006 and 2007. Both short- and long-term CMBS loans that were originated in 2006 and 2007 could be subject to “early-term” default before the balloon date is reached if cash flow on the property deteriorates sharply. If property value drops and net operating income (NOI) still covers debt service, the borrower’s free cash flow should induce him to wait until the balloon date to look at refinancing or default. However, if NOI does not cover debt service, the borrower may default early rather than wait.
- The severity of the credit crunch and of the financial market meltdown has highlighted the vulnerability of the REIT financial structure, even with tight rating agency restrictions on overall leverage. With REITs paying out large dividends to qualify for tax-exempt status, they lack free cash flow and are constantly in need of refinancing and new financing. Quite a number of REITs are facing severe refinancing issues in the commercial mortgage market. With investor scrutiny and even alarm suddenly refocused on large

loans, many large loans that will need refinancing at balloon dates have been unable to secure funds. The underlying weakness of the REIT financial structure has amplified the underlying real estate risks and the resulting downturn in their stock prices. In addition to obvious risks, very large opportunities exist to restructure REITs in need of refinancing!

COMMERCIAL MORTGAGE DEFAULTS: DR. JEKYLL OR MR. HYDE?

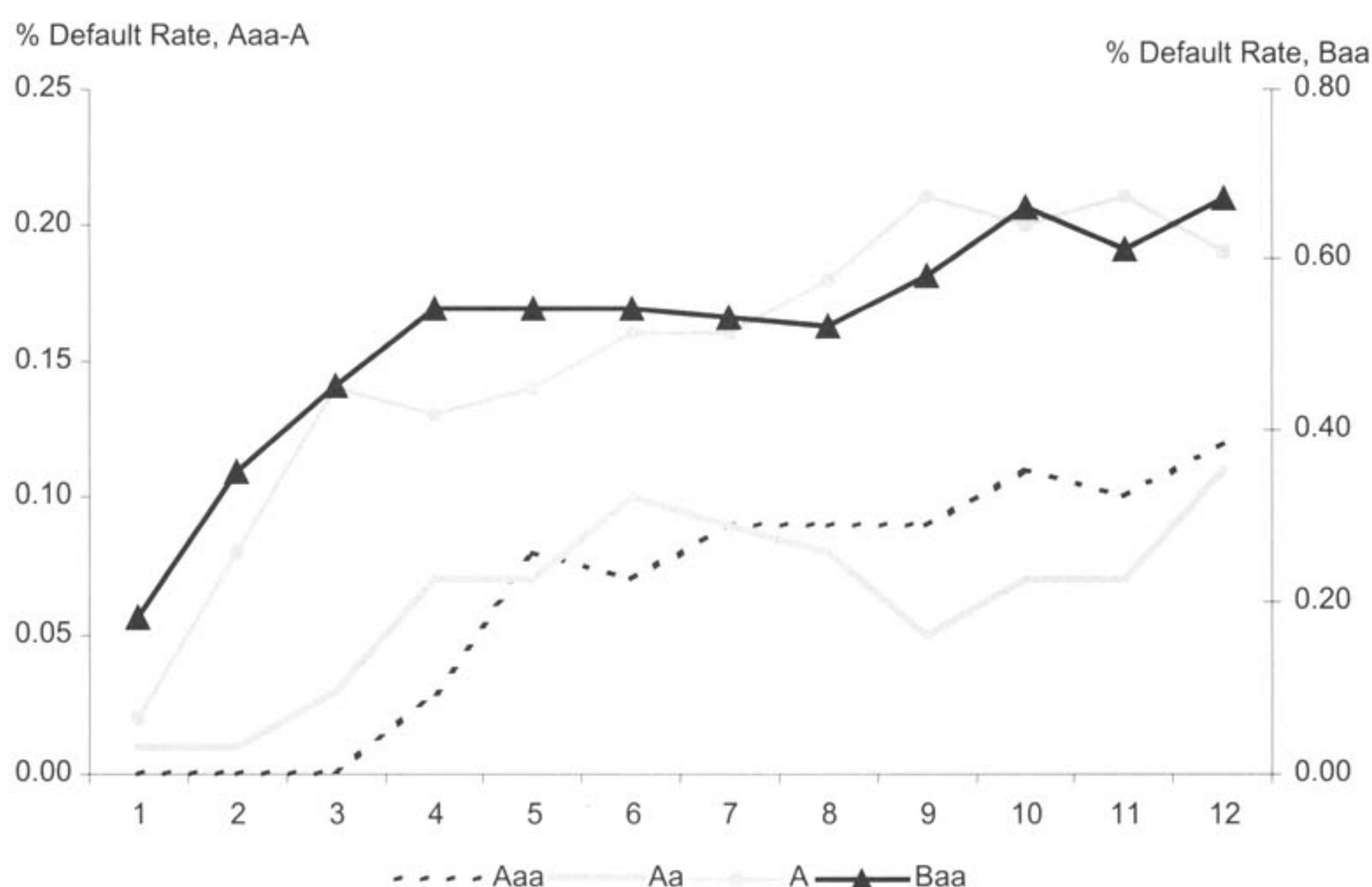
Past upsurges in commercial mortgage defaults have tended to be “all or nothing.” Loan vintages were either all good or all bad, with no middle ground. The severe 1973–1975 recession produced a substantial upsurge in loan defaults. The equally severe 1980–1982 double-dip recession saw a striking absence of problem commercial mortgage loans, reflecting very tight commercial space markets in 1979 and 1980 (Exhibit 3). The early 1990s recession was a less severe macroeconomic event but with severe overbuilding problems within commercial real estate. In all of these episodes, results were highly uniform across vintage years.

We believe the results in the 2008–2009 recession will be much more varied by vintage year. In contrast to tougher underwriting over the period 1994–2004, the large pool (\$450 billion) of 2006–2007 CMBS loans is very vulnerable to both early-term defaults and balloon-date defaults. Much more solidly underwritten 10-year loans, originated in the 1998–2001 period, will be much better candidates for securing refinancing and avoiding balloon-date default.

What accounts for the propensity of commercial mortgages to play the role of the responsible Dr. Jekyll in some episodes, or vintages, and the deranged Mr. Hyde in others? The answer is the same set of factors that explain the difference between defaults in investment-grade bonds and junk bonds. Defaults of investment-grade bonds are historically low on average, with the yearly default rate rising over time (Exhibit 9). In contrast, defaults in junk bonds hit “early and often” and, after peaking early, tend to decline in subsequent years, a pattern opposite that of investment-grade bonds (Moody’s [2005]).

In the case of corporate bonds, the investment-grade bond and the junk bond refer to different companies. In the case of home mortgages and commercial mortgages,

EXHIBIT 9 Corporate Bond Marginal Default Rates, 1970–2005



Source: Hamilton et al. [2006].

however, defaults can follow either pattern—depending on the amount of leverage. Given the underlying risk or property volatility, large equity investments and low LTVs (high DSCRs) constrain the bidding for properties, dampen the cycle, and eventually result in investment-grade performance for commercial mortgage whole loans. Low equity contributions and too much debt on easy terms destabilizes the cycle, contributes to overbuilding, and results in the early-and-often default pattern that characterizes junk bonds.

One might surmise that there is an asset-specific “tipping point” in the amount and underwriting quality of leverage, beyond which ANY asset market is prone to bubbles. Arguably, it behooves bank and insurance company regulators (including regulators of investment banks) to ensure that financial institutions aim for the right side of the tipping point. Failure to appreciate this issue led regulators, analysts, and investors to be overly optimistic about credit problems in home mortgages and perhaps overly pessimistic about problems in commercial properties. In our view, it is not a coincidence that the much-worried-about commercial mortgage market at least began the 2008–2009 recession with a near-zero delinquency rate, while the not-worried-about home mortgage sector has been the primary instigator of the downturn.

ENDNOTE

¹CMBX refers to an index of credit default swaps that insure CMBS cash bonds.

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