THE RISK CONSIDERATIONS OF COMMERCIAL MORTGAGE BACKED SECURITIES: A COMPARISON OF THREE SECURITIES

by

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ABSTRACT

Financial activity in the real estate industry co-exists in both the private and public markets. The risks of the traditional, private market have been extensively documented. However, the relative newness of the public market has left some investors questioning the applicability of traditional analyses to the public market. The public market encompasses a new set of risk factors that financial investors need to examine before making an investment. This thesis explores the inherent risks in the public debt market through a comparison of three commercial mortgage backed securities.

The securities studied represent the typical commercial mortgage backed security product available in the market. The three securities include a single asset - single borrower transaction, a multiple asset - single borrower transaction and a multiple asset - multiple borrower transaction. Information about these securities was supplied by a large insurance company who purchased these securities. These securities appeal not only to this insurance company but also to other large institutional investors.

This thesis provides a summary of the CMBS market, a literature review and a historical perspective of real estate within an insurance company. A cross comparison of the three securities explores the differences as they relate to the general market, the investment strategy and the available literature. Finally, this paper concludes that the risks inherent in each type of security are unique to that specific security. The implication is that the investors need to scrutinize every potential investment and be wary of generalizations in this new and evolving market.

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CHAPTER 1 - COMMERCIAL MORTGAGE BACKED SECURITY MARKET

The real estate industry, like most other industries, faces inevitable business cycles. The recession of the 1990s epitomizes a period when the real estate market hit the bottom of the cycle. During that period, the real estate industry suffered a severe drop in values. On the other hand, those hard times created the impetus for innovation and creativity, especially in obtaining capital.

Indeed, one of the major issues during this period was the lack of capital. Money simply did not flow as freely as it did during the 1980s; real estate organizations had to actively seek scarce resources to sustain their businesses. For various reasons, the public markets offered more opportunities to obtain capital than the private markets. The surge of initial public offerings of real estate investments trusts (REIT) during this period demonstrates the real estate industry's reliance on the public market.

Although not as widely discussed as the REIT market, the commercial mortgage backed security (CMBS) market also afforded another source of public capital. While the REIT market provided equity, the CMBS market provided debt. Even though both products existed prior to the recession of the 1990s, the real estate industry broke new ground by the degree to which these vehicles were used. As a result, a new level of financial sophistication was required to participate in real estate investments.

This thesis attempts to demystify some of the concerns *within* the public, commercial real estate debt market. A case study approach is taken whereby three distinct CMBS transactions that were bought by an unnamed insurance company are compared and contrasted. The case studies are used to identify if one type of CMBS is a better investment over another type of CMBS. The securities studied are representative of the available product in the CMBS market and the CMBS product that appeals to an insurance company as a potential investor in the CMBS market.

This chapter starts by providing a background on the CMBS market. The literature that relates to the risks of the CMBS is then discussed. The CMBS market is then compared to other public debt markets: residential mortgage backed securities and corporate bonds.

1.1 Background of CMBS Market

The CMBS market is currently a relatively small component of the US debt market, but it is growing rapidly. The market began securitizing commercial mortgages in the mid to late 1980s. The market established itself and began growing rapidly in the early 1990s. Annual issuance in the CMBS market was about $4.6 billion in 1991, $16.6 billion in 1992 and $20 billion in 1994.[1] This growth established the CMBS market as a viable fixed-income security.

Numerous studies describe why this market has exploded; however, most sources focus on two reasons: the absence of traditional lenders and the activity of the Resolution Trust Corporation (RTC). First, traditional debt lenders, such as insurance companies and commercial banks, withdrew from the market. Beginning around 1989 and continuing until about 1991, the market experienced declining flows of commercial mortgage originations.[2]

During this period, many lenders realized significant losses that stemmed from real estate. As a result, they focused on their internal problems, namely, the management and disposition of non-performing assets. Additionally, regulations such as the Risk-Based Capital rules made whole loan investments prohibitive. The retraction of the traditional

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[1] Quigg, Laura., 1993, "Commercial Mortgage-Backed Securities," Lehman Brothers: Fixed Income Research Mortgage Strategies, December, page 1; and, Nomura Securities International, Inc., 1995, "Commercial Real Estate Quarterly," Global Real Estate Research, January, page 1.

[2] Nomura Securities International, Inc., 1994, "Commercial Real Estate Quarterly," Global Real Estate Research, October, page 34.

lenders left a void in the market for borrowers who needed financing; Wall Street filled this gap through securitization.

The second reason for the explosive growth is attributable to the RTC's CMBS programs. The RTC's mandate was to dispose of assets from failed savings and loan institutions quickly at as high a price as possible. While the agency sold many assets through bulk sales and auctions, the RTC also sold mortgages through securitized placements.[3] These securitized placements seriously contributed to the growth of the CMBS market. At its peak in 1992, the RTC securitized debt contributed about 40% of the total annual issuance.[4]

To a certain degree, the exceptionally low interest rate environment also helped fuel this market. The lower interest rates allowed borrowers to refinance based on revised debt service coverage ratios (DSCR). Although the traditional lenders were absent from the market, Wall Street provided the necessary financing. The higher DSCR made the loan appear more stable and, thus, more attractive to investors.

Supply in the future will be influenced by the participation of traditional lending sources, the winding down of the RTC and the interest rate environment.[5] The combination of these trends in 1995 will result in issuance less than the 1994 peak of $20 billion. Today, traditional lenders have re-entered the commercial real estate whole loan market. These lenders are originating loans at rates lower than can be obtained in the public market. With a higher interest rate environment, the costs to securitze outweigh the spreads that the private market will accept. Consequently, many borrowers are returning to the more affordable, traditional financing sources.

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[3] BBC Investment Advisors, "The CMBS Market and Product," page 2.

[4] Quigg, Laura., 1993, "Commercial Mortgage-Backed Securities," Lehman Brothers: Fixed Income Research Mortgage Strategies, December, page 1.

[5] Lehman Brothers Fixed Income Research MBS and ABS Strategies, 1995, "Commercial Mortgage Backed Securities - 1995 Outlook," January.

In combination with a competitive private market, the RTC's diminished capacity to participate in the CMBS market will obviously affect supply. The RTC's expected contribution to the market will significantly decrease in 1995, and lower levels of issuance is expected in the short term.[6]

Notwithstanding these challenges, the CMBS market is expected to continue to grow. Much of the supply is expected from borrowers refinancing existing loans. Since few commercial real estate loans fully amortize, at the end of the of the term these loans must be either paid off or refinanced. Considering the estimated $1 trillion total commercial real estate market and a typical seven to ten year loan term, about $150 billion comes due annually. About one third of these mortgages are refinanced by the same lender. Therefore, the remainder (about $100 billion) represents a huge potential for securitization.[7]

Another supply source will be from the conduit programs. A conduit program is a plan to directly lend to borrowers and securitize those loans. Many conduits have created strategic alliances with investment bankers who will eventually issue a CMBS backed by the loans originated in the conduit program. Before a securitization may occur, the loans are "warehoused" until the pool is large enough for market acceptance. The time frame may take some time because the typical pool contains many small loans.

Conduit programs are numerous and are filling a lending niche that does not appeal to traditional lenders. The conduit programs target the properties that are considered Class B and/or Class C. Conduit programs do not target the expensive, investment grade properties (Class A properties) because the value of those assets dominate the loan pool and create an unwanted concentration risk. The credit quality of these assets generally is

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[6] Ibid.

[7] ABA Banking Journal April, 1995. Vol. LXXXVII, Issue 4, page 54. Comments by Michael Mayberry, president of Amersco Capital Corporation of Dallas, TX.

not outstanding, but through structured financing the real estate risks may be shifted. Additionally, the conduit programs have the ability to infuse the market with some standardization because the newly originated loans will have similar underwriting procedures and loan document provisions.

As the market continues to grow, more real estate participants are realizing the potentials from the CMBS market. Commercial real estate securitization will eventually provide benefits similar to those of the residential securitized market. Securitization is expected to lower the costs to the borrowers, allow lenders to make more loans and provide investors with an investment alternative that meets their risk and return parameters.

1.2 Commercial Mortgage Market Compared to Other Markets

The CMBS market has attributes of the commercial whole loan market, the residential mortgaged backed security market and corporate debt. A comparison between the whole loan market and the CMBS market is useful to determine relative value of one investment compared to the other investment. While some investors may have the flexibility to invest in either whole loans or commercial mortgage backed securities, many investors do not have the expertise or the appetite to invest in the whole loan market and look to the CMBS market exclusively. This thesis focuses on the actions of the latter investors.

For these investors, an understanding of the CMBS market can be gained through a review of the residential mortgage market. However, caution must be employed because the risks of this market is considerably different than the CMBS market.

1.2.1 Mechanics of the Securitized Residential Mortgage Backed Security Market

The residential mortgage market is a complicated market that contains many security variations. Examples include the mortgage-back bond (MBB), the collateralized mortgage obligation (CMO), the mortgage pass-through security (MPT), and mortgage pay-through bonds (MPTB). Since much of the CMBS market was modeled around the residential

mortgaged backed market, a basic understanding of the mechanisms in place in the residential mortgage market provides a frame of reference to understand the CMBS market.

When a lender issues a mortgage, the mortgage may be classified in two primary categories. The first category contains loans that are government insured FHA (Federal Housing Administration) or VA (Veterans Administration) loans. The second category contains loans called conventional loans. The conventional loans are further classified by as either conforming or non-conforming. A conforming loan is one that meets the underwriting standards established by Federal National Mortgage Association (FNMA) or Federal Home Loan Mortgage Corporation (FHLMC). In order to qualify as a conforming mortgage the borrower and lender must meet the following standards: (1) a maximum payment to income ratio, (2) a maximum loan to value ratio and (3) a maximum loan amount. If a loan applicant does not satisfy the underwriting standards, then the mortgage is called a non-conforming mortgages.

Most lenders sell those mortgages. Potential purchasers of the loan pools are Government National Mortgage Association (GNMA), FHLMC, FNMA and private issuers. GNMA buys those loans that are governmentally insured and FHLMC and FNMA buys those loans that meet their underwriting standards. The non-conforming loans are usually purchased by private issuers.

Depending on the purchaser, the guarantee and credit support varies. GNMA guarantees full and timely payment of principal and interest, supported by the full faith and credit the U.S. Government. Generally, the FHLMC and FNMA guarantee full and timely payment of principal and interest, supported by the financial strength of each respective agency.[8]

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[8] FHLMC and FNMA have agency status but are not obligations of the U.S. Government. FHLMC and FNMA are for-profit corporations, stock exchanged, federally regulated by the government. As a result, their guarantees do not carry the full faith and credit of the U.S. Government.

These pools, called agency pools, essentially shelter the investor from default risk because the collateral is guaranteed.

Private issuers have various guarantees that are secured by the underlying homeowner credit and equity plus the combination of subordination, insurance, or third party agreements. These guarantees are not as comprehensive as the agency loans, but this segment of the market is not nearly as large as the agency market.

The investors in the residential MBS market will receive cash flow depending on how the purchaser of the loan pool structures the security. The agencies will issue a pass-through security based on the underlying mortgages. Then, it will issue a CMO secured by the cash flow from the pass through security to provide more predictability in the cash flows for certain classes. A CMO is a type of pay-through bond which is divided into multiple classes. These classes typically have different maturities and principal payment priorities. Most often, CMOs are issued by a special purpose entity organized by a sponsor. The entity is typically an owner trust or corporation.[9]

Since the majority of the residential MBS market supported by agency pools, default risks are nearly eliminated in the residential MBS market. However, the market could not eliminate the possible of borrower prepayments. The prepayment risk has been extensively studied and complicated prepayment models have been developed to deal with this issue.

1.2.2 Mechanics of the CMBS Market

The CMBS market, like the residential market, uses a CMO structure that is secured by the underlying commercial mortgages. The CMO structure allows the cash flow to be prioritized and, thus, create certain tranches that are riskier than other classes.

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[9] Fabozzi, Frank J., Editor, 1995, The Handbook of Mortgage Backed Securities, Probus: Chicago, Illinois, pages 9-27.

The descriptions of a CMO in the residential market are the same. The mortgagees are assigned in a trust and a servicer is appointed to oversee the loans. The trustee and the servicer charge a fee that is usually paid before the certificate holders. The investment bankers determine the amount of each class and the nuances of the security's structure.

An example of a simple structure is tranched into three classes: A, B and R. The A class is the senior piece and typically receives principal repayments before any other class. The B class, often called the junior piece, receives principal after the A class. Losses that arise from default directly reduce the principal balance of the B class. If the losses entirely erode the position of the B class, then the losses will be allocated to the A class. The R class, or residual class, does not have a principal balance, but receives income resulting from a difference in the underlying loan rate and the pass through rate of the certificate. More complicated structures are usually a variation of this format.

1.2.3 Comparison of Residential MBS and Commercial MBS

The mechanics of a CMBS and the residential mortgage pass-through security are very similar. In both markets, the lender issues a mortgage that is secured by a piece of real estate. The lender then sells or deposits the note into a trust which in turn issues securities that are backed by the loan(s) originally made by the lender. The securities are then tranched, assigned a rating by a Nationally Recognized Statistical Rating Organization (NRSOR) and sold to investors, the certificate holders. The certificate holders own an undivided interest in the trust. The trustee then "passes through" the cash flow received to the certificate holders. The purchasers of the pass-through securities pay taxes as though they hold the mortgage directly.[10]

In all cases, the borrower pays the debt service on the loan(s), possibly oblivious to any change in ownership of the note. Because commercial loans are more management

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[10] Bruggeman, William B. and Jeffrey D. Fisher, 1993, Real Estate Finance and Investments, Ninth Edition, Irwin: Homewood, IL.

intensive than residential loans, a servicer is hired to maintain and monitor the underlying loans. The servicer oversees the properties and the collection of debt payments. These payments pass through to the certificate holders according to the order dictated by the security structure.

While the structural components of the commercial market are similar to the residential market, the risks are markedly different. In the residential market, the certificate holders are concerned with prepayment. In a declining interest rate environment, rational, residential borrowers will refinance their mortgages. Refinances, or prepayments, may occur when alternative fixed-income investments are not attractive. Additionally, these prepayments will shorten the duration of the security. When interest rates increase the borrowers will probably not prepay at the expected rates, and, therefore, the duration of the assets will increase. Either case may create uncertainty as to the receipt of cash flows. The investor is especially concerned with prepayments because there are no restriction when the borrower may prepay.

On the other hand, the commercial market generally imposes restrictions when prepayments may occur. Commercial real estate loans are typically made with lock-out periods or with yield maintenance agreements. A lock-out period prohibits the borrower from making prepayments during a defined period. A yield maintenance agreement does not necessarily prohibit prepayments. However, if a borrower prepays, then the borrower must pay an amount so that the lender will receive a predetermined yield. Some mortgages include both of these clauses and others may contain only one or another clause. Nonetheless, the presence of one of these clauses mitigates the effect of prepayment in commercial real estate loans.

Although prepayment risk may be lessened through lock-out periods and other clauses, default risk cannot be avoided. The CMBS market may realize losses from defaults, but the residential MBS market is insured against defaults through government programs. Default insurance in the commercial mortgage market is currently is not available and

probably will not develop unless every lender requires such insurance. Otherwise, only those loans that need the insurance will pay for such coverage which would skew the probability of defaulting and make the insurance coverage prohibitively expensive.

Compounding the default risk, non-recourse clauses contained in most commercial loans expose investors to an added risk. A non-recourse loan limits the lender to recovery of the real estate assets that secure the loan; the borrower is not held personally liable for a default. Yet, one- to four-family loans almost always contain recourse clauses. Because a borrower with a recourse loan is less apt to default, non-recourse clauses usually exposes the lender to more risk.

Related to default risk, extension risk is anther factor that the commercial market is subject to that is not evident in the residential market. As mentioned previously, most commercial loans are not fully amortizing. Therefore, at the end of the loan, the loan balance must be re-financed. However, almost all residential loans fully amortize so that the borrower has paid all the debt on the property by the end of the loan term. Consequently, the commercial mortgage market, unlike the residential market, is exposed to the possibility that the loan cannot be re-financed and the borrower will default.

In that situation, the lender may extend the loan and continue to receive debt payments. Alternatively, the lender may foreclose and may not realize the full amount of the loan balance. When the lender extends the terms of the loan, the lender foregoes the opportunity to reinvest that money in alternative investments. Additionally, the lender extends the duration of the existing investment, but is not compensated for this factor. Extension risk could also pose problems in a changing interest rate environment and create asset/liability matching problems.

1.2.4 Commercial Mortgage Market Compared to the Corporate Bond Market

Commercial mortgage backed securities, in some ways, are more similar to corporate bonds than to residential bonds. In fact, commercial mortgage and CMBS are sometimes

viewed as substitutes for corporate bonds.[11] Nonetheless, there are some important distinctions that make the CMBS market unique.

The CMBS structure isolates the assets that back the security and protects those assets from external credit risk. This is accomplished through the creation of a bankruptcy remote entity for the borrower and its agent, the issuer. These separate, legal entities exist for each CMBS so that the originator's potential credit problems, including bankruptcy, do not affect the assets that back the security. The entity also prohibits the consolidation of the entity's assets with the assets of the originator's affiliates.

The creation of a bankruptcy remote entity does not necessarily imply that the entity itself is bankruptcy proof. Rather, the credit risks are self-contained in the security. External forces will not trigger bankruptcy. Conditions present in the assets that secure the bonds are the only reasons that could cause bankruptcy.

This bankruptcy remote entity is also created with a single purpose. That is, the structure limits the business activities to the operation of the security and its assets. While this limitation provides little flexibility, it forces management (operated through the agents of the certificate holders, the Servicer and the Trustee) to focus on the assets that back the security.

The focus of the CMBS differs significantly from corporate indentures. Because corporate debt is backed by the operation of a business, corporations have flexibility in their business strategy and planning. The corporate market may venture into new projects that were not part of the company when the bonds were issued. Presumably, corporations consider their reputation in the capital markets when making decisions to participate in new projects. However, to the extent that these new projects dilute or diminish value,

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[11] Fabozzi, Frank J., Editor, 1995, The Handbook of Mortgage Backed Securities, Probus: Chicago, Illinois, pages 536.

corporate debt holders expose themselves to added management risk that is not evident in the CMBS market.

In both the corporate debt and the CMBS markets, the rating agencies recognize competent management. Emphasis is placed on the borrower. In the CMBS market, however, the loans that secure the securities are non-recourse. Therefore, the rating procedure is more onerous because the rating agencies focus on the asset quality *and* the reputation and perceived management ability of the borrower.

Both the corporate debt market and the CMBS market typically use subordination in the structures. Subordination is the process of sharing risk of credit losses disproportionately among two or more classes of securities.[12] The senior pieces are protected by the subordination of the junior pieces and any equity in the structure. The junior pieces are protected only by the equity in the structure. The CMBS market differentiates itself from the corporate market in the way defaults and associated losses are allocated. The CMBS market allocates the losses first to the lowest rated classes, which is not always the case in the corporate debt market.

Clearly, the characteristics of the commercial debt market differ from those of the residential debt market and the corporate debt market. Therefore, the credit and associated pricing considerations are not homogeneous. Although some overlapping occurs, the risk considerations of the CMBS market are unique.

1.3 Literature Review

Limited research is available to help guide a detailed analysis of the CMBS market. This market is so new that few academics have yet to study this market in a comprehensive manner. While some research on the CMBS market is available, much of the market

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[12] Ibid., pg. 526.

analysis has originated from the investment bankers who sell the securities. Few articles that relate to the structure and credit risks of the market are available. One independent academic research paper that specifically relates to the credit risks of the CMBS market is summarized below.

In a paper titled, "The Pricing of Multi-Class Commercial Mortgage-Backed Securities" by Paul Childs, Steven Ott and Timothy Riddiough, typical CMBS structures are analyzed. A sophisticated valuation model is applied to test the effect of diversification of the assets and interest rate sensitivity. The finding of this paper are particularly relevant to the focus of this thesis. The authors conclude that security structure and the correlation of the underlying assets play an instrumental part in the tranche price and required yield spread. Their analysis indicates that senior pieces of a CMBS that comprise 70 percent or less of the pool are essentially free from default. The second finding is that diversification may actually be detrimental to the lowest class, or first loss class, of a CMBS.

A more general study of the CMBS market and general overview is provided by David P. Jacob and Kimbell R. Duncan in an article contributed to The Handbook of Mortgage Backed Securities called "Commercial Mortgage Backed Securities".[13] This article provides a broad overview of the CMBS market and some of the general concerns in the CMBS market. The approach is a qualitative overview. The authors include descriptions of the CMBS market, important property types, commercial mortgages and the rating process. The article then delves into a risk review of the real estate, the loan characteristics and the security structure overview. The chapter ends with a brief discussion of CMBS valuations.

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[13] Fabozzi, Frank J., Editor, 1995, The Handbook of Mortgage Backed Securities, Probus: Chicago, Illinois, Chapter 25.

The conclusions of this article are that the CMBS investors do not need appreciating property values for protection; however, property devaluation will negatively impact CMBS investors and the CMBS market. These authors foresee improved standardization and improved liquidity. However, until that time, they believe that the realized spreads in the CMBS market are warranted due to the newness of the market.

An article that Patrick Corcoran and Duen-Li Kao authored called "Assessing Credit Risk of CMBS" tracks the default experience on underlying commercial mortgages.[14] The authors then use this information to infer the likely credit outlook for CMBS. They conclude that in a moderately improving real estate economy the A class is relatively insulated from serious credit risk. On the other hand, the B class which suffers first from losses, is still a value relative to corporate bond market. This article then focuses on the quantitative aspects of the B class structure and relative spread that can be achieved under different scenarios.

The preceding article summaries are the most recent articles that deal with the credit aspects of the CMBS market. Other articles deal with either the fundamentals of the market, such as the supply, demand and securitization trends, or the pricing considerations in the CMBS market. Of course, other relevant research relates to the commercial real estate whole loan market. Real estate portfolio literature and commercial real estate default studies are pertinent to the CMBS market, but a discussion of these articles is limited to the following applicable sections in this thesis.

The risks that specifically relate to the securities studies are discussed in Chapter Three and Chapter Four. The following chapter outlines why the CMBS product fit's into an insurance company's portfolio.

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[14] Fabozzi, Frank J., Editor, 1995, The Handbook of Mortgage Backed Securities, Probus: Chicago, Illinois, Chapter 26

CHAPTER 2 - THE INSURANCE INDUSTRY AND REAL ESTATE

This chapter outlines the pressures exerted on an insurance company's real estate investment portfolio. The influence of the National Association of Insurance Commissioners (NAIC) and the implication of the Risk Basked Capital rules are discussed. This chapter concludes with a discussion of the extent to which CMBS fit into the investment strategy of an insurance company.

2.1 Overview of Real Estate Activity in Insurance Companies

Real estate activities are inextricably linked with an insurance company's basic insurance practices through its investment policies. Therefore, the basic mechanics of an insurance company's business is presented to gain an understanding of how real estate fits into the investment strategy.

The insurance industry contains many intricacies, but, generally, the main focus is selling insurance policies. After a life insurance company sells a policy, the purchaser pays periodic premiums to the life company. Then, the company establishes reserves for future payments based on projected actuarial rates of payments for all of its policyholders. On average, the life company receives more in premiums than what is paid out to policyholders. In other industries, this difference may be considered profit. However, life companies attempt to manage the difference so that in a competitive and regulated market they may use these proceeds to reduce the policy premiums for future holders.

Life companies manage this difference through investments in the "general account". The general account contains a diverse portfolio, of which bonds, stocks and real estate are

included. Income earned from the general account is then used to reduce the premiums for its policy holders. [15]

Since a life company's liabilities are long term and relatively predictable, the investment strategy is to match these liabilities with long term investments. However, the risk in using long term investments is the exposure to interest rate risk. The effect of discounting future payments at a rate different than when the investment was bought is more pronounced for a long term investment than a short term investment. Additionally, when interest rates drop and the company has available funds to invest, the yield to the insurance company will not be as high if the funds were invested before the interest change. This foregone opportunity is considered reinvestment risk.

To deal with this uncertainty and to measure the interest rate sensitivity, insurance companies commonly calculate the duration of their investments.[16] By matching the duration of assets and liabilities, the company can immunize, or hedge, itself from interest rate fluctuations. If a portfolio is not immunized against interest rate changes, a decrease (or increase) in interest rates can cause capital gains (or losses) and decreases (or increases) in available reinvestment income. Yet, in a portfolio with assets and liabilities perfectly matched by their duration, these two effects will cancel each other out. As a result, the company is assured that the capital needed to meet its future obligations is available.

When considering real estate investments, the unpredictability of the cash flows made real estate equity investments unattractive. Additionally, real estate equity investments are difficult to compare to other investments that match the company's liabilities. Equity

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[15] Bruggeman, William B. and Jeffrey D. Fisher, 1993, Real Estate Finance and Investments, Ninth Edition, Irwin: Homewood, IL, page 683.

[16] The duration is a measure of the average life of a bond, defined as the weighted average of the times until each payment is made, with weights proportional to the present value of the payment (Bodie, Kane and Marcus, page G-5).

real estate investments like other equity investments, are also riskier investment endeavors. Accordingly, real estate equity investments were generally avoided.

Due to these short comings of real estate equity, many insurance companies traditionally diversified their holdings with real estate debt. Debt financing provided long term, stable and predictable cash flows. Insurance companies typically provided permanent financing of loans that were secured by investment-grade real estate. These projects tended to be located in the most advantageous location in the market and involved large outlays of funds. More risky financing needs, such as construction financing and the financing of the lesser grades of real estate, were left to the local, commercial bankers who had more immediate contact with the development process and the assets and had expertise in the field of construction.

However in the late 1970s and early 1980s, insurance companies reevaluated their real estate practices in response to the increasingly alarming inflationary environment. Despite the difficulty of accurately estimating the cash flows from real estate equity investments, insurance companies sought equity real estate investments since it was believed to keep pace with inflation better than other long term fixed rate assets, including real estate debt. Many yield-hungry insurance companies allocated a significant portion of their portfolio to equity real estate investments. The favorable tax treatment of real estate and added portfolio diversification was also an added motivation for direct real estate investments.

The apparent willingness of life insurance companies to undertake higher risks and sacrifice some safety of principal in pursuit of higher overall returns can be seen as a slight shift in their investment policies.[17] Instead of concentrating on relatively safe, long term cash flows, insurance companies moved into riskier real estate activities, such as 100% equity real estate investments and equity participating mortgages.

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[17] Bruggeman, William B. and Jeffrey D. Fisher, 1993, Real Estate Finance and Investments, Ninth Edition, Irwin: Homewood, IL, page 684.

Equity participating mortgages seemed to solve both problems; the insurance company received predictable cash flows and received a portion of the appreciation. Yet, a study prepared for the Real Estate Research Institute suggests that the borrower may have a disincentive for financing with a participating mortgage.[18] Since the lender is not as aware as the borrower of the available "good and bad" projects, the borrowers may choose to finance the better projects with a fixed rate mortgage. Thus, the high expected appreciation would not have to be shared with anyone but the developer. The idea of adverse selection was not publicly considered when lenders were making participating loans; consequently, this product type may not have been priced appropriately.

Even though participating mortgages may have contained unforeseen risks, insurance companies attempted to mitigate the known real estate risks. Portfolios were diversified by product type and location; investments were typically made on investment-grade real estate assets which are less suspect to downturns in the economy.

Despite these efforts, many insurance companies experienced significant losses in real estate during the recession of the early 1990s. Assets previously held as mortgage loans were foreclosed upon and the real estate was then held as an ownership interest. Consequently, many insurance company's equity portfolios dramatically increased. Often large losses were realized on the mortgages and thus on the balance sheet of the company. The extent of some of the losses were so severe that a few large insurance companies failed including Executive Life Insurance Company and Mutual Benefit Life Insurance Company. The publicity surrounding the failed institutions was pervasive; many questioned the financial viability of the remaining insurance companies.

Even though some of the past practices were under attack, most states already had laws in place to govern the operation of insurance companies. These laws, as they relate to real

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[18] Riddiough, Timothy J. "Incentive Issues and the Performance of Participating Commercial Mortgages", prepared for the Real Estate Research Institute.

estate, imposed restrictions on real estate activities such as individual loan limits and a maximum percentage of total real estate loans to total assets.[19] Since these regulations did not appear sufficient to protect policy holders during the recession in the early 1990s, new regulations were needed.

In the early 1990s, The National Association of Insurance Commissioners (NAIC) created new regulations, called Risked Based Capital (RBC), to fill that need.[20] The NAIC intervened before, and in place of, federal involvement. The rules, adopted on December 6, 1992, are broad based; all investments (including real estate) are affected.

2.2 Influence of Risk-Based Capital Rules on CMBS Investments

The risk based capital rules are a tool to help the state regulators monitor the financial health of an insurance company. Although not intended to be used as a competitive measure, the RBC rules significantly affect the portfolio strategy of insurance companies. The rules essentially require that an insurance company maintain a certain level of reserves to prevent regulatory intervention and the failures that occurred in the early 1990s.

A company's capital adequacy is measured by the ratio of 50% of its total RBC to its total adjusted capital.[21] Total adjusted capital includes the company's Asset Valuation Reserve, other voluntary investment reserves and one half of the company's dividend liability.[22] The RBC is a balance sheet manipulation that measures risk in an insurance

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[19] Bruggeman, William B. and Jeffrey D. Fisher, 1993, Real Estate Finance and Investments, Ninth Edition, Irwin: Homewood, IL, page 685.

[20] The NAIC is an association of insurance commissioners of all 50 states and assists state regulatory agencies in monitoring the financial condition of interstate companies.

[21] Merrigan, Peter A. The Real Estate Finance Journal, Fall 1994. How Risk-Based Capital Regulations for the Life Insurance Industry Affect Real Estate, page 61.

[22] The Asset Valuation Reserve is reserve reported as a mandatory liability on each insurer's balance sheet. it sets a reserve level for income investments and the valuation risk for equity investments. The RBC do not appear as a financial statement liability.

company's holdings. Balance sheet accounts are categorized and weighted according to the RBC rules.

While the ratios adequately serve as a regulatory mechanism, any other use may be a misapplication of the rule's intended purpose. As a result, some insurance companies are concerned that the ratios will used for other reasons, namely as a competitive measure. Since the RBC ratios are available to the public, an understandable reaction of insurance companies is to re-balance their portfolios to enhance their financial position based on the RBC rules. This might encourage an insurance company to divest certain assets that are considered risky by the NAIC.

Risks are categorized into asset default risk, insurance risk, interest rate risk and general business hazard risk. The asset default risk (sometimes called C1) is, by far, the most significant component of the RBC, comprising 77% of total RBC. This category consists of risk from bonds, mortgages, preferred and common stock, separate accounts, real estate, reinsurance and other long term assets. Adjustments within this category are also made for the concentration of risk in single exposures, the diversification of risk in the bond portfolio, and the company's experience with commercial mortgages. The following chart highlights the RBC factors in the asset default category.

Summary of C-1 Risk-Based Capital Factors

Bonds:

NAIC Category	Rating	RBC Factor
1	AAA to A	0.003
2	BBB	0.01
3	BB	0.04
4	B	0.09
5	CCC	0.20
6	In or Near Default	0.30

Mortgages:

NAIC Category	RBC Factor Commercial	RBC Factor Residential
In Good Standing	0.03	0.005
90 Days Overdue	0.06	0.01
In Foreclosure	0.20	0.20

Real Estate:

NAIC Category	RBC Factor
Company Occupied	0.10
Investment	0.10
Foreclosed	0.15

Common Stock:

NAIC Category	RBC Factor
Unaffiliated Companies	0.30
Affiliated Companies:	
U.S. Life	% Owned x RBC
U.S. P &C	% Owned x RBC
Investment Subsidiary	% Owned x RBC
Foreign Insurers	1.0
Other	0.30

Separate Accounts:

NAIC Category	RBC Factor
With Guarantees:	
Indexed	0.003
Not Indexed:	
Guar. $\leq$4% yr.	0.50
Guar. > 4% yr.	1.00
Without Guarantees	0.10

Miscellaneous:

NAIC Category	RBC Factor
Other Long Term Assets:	0.20 of aggregate statement value
Interest Rate Swaps:	0.0
Policy Loans:	0.0
Reinsurance:	0.005 for all reinsurance with authorized, unaffiliated companies
Cash	0.003
Short Term Investments	0.003
Premium Notes, Collateral Loans, Write-ins	0.05

Source: Merrigan, Real Estate Finance Journal, Fall 1994

As a result of these regulations insurance companies have moved away from investment with the high capital factors. Because real estate investments fall into this category, insurance companies with troubled RBC ratios have gradually disposed of their real estate portfolios, which consist often times of both equity and debt.

Insurance companies employed several tactics to purge their portfolio of real estate holdings, depending upon the assets that were held by the company. For equity owned real estate assets, companies chose exit strategies (or some combination thereof) that either sold each asset individually or packaged many assets and sold the package to one buyer. The first strategy allowed the insurance company the opportunity to position the asset in the market and maximize the proceeds from the sale. On the other hand, this time consuming process was costly and management intensive.

The second strategy, a more expedient process, was a bulk sale. A bulk sale allowed numerous properties to be packaged and sold to one investor. Countless venture capital funds have been created to take advantage of such transactions. Still, the sellers of these portfolios realized prices that were many times steeply discounted relative to face values. This discount seemingly compensated for the time and management expertise saved if so many assets were to be marketed one-by-one.

Securitization is another form of a bulk sale for the less liquid real estate mortgages. With the aid of an investment banker, the insurance company can sell the real estate loans which are then securitized as commercial mortgage backed securities. Securitization can offer the company two choices. First, the assets may be completely sold off to the conduit or investment banker. Second, the company could retain partial ownership in the assets by selling to "securitizers" and then purchasing certificates in the CMBS, thus reinvesting in those assets. The benefit of the second strategy is that the company is already familiar with the risks in the securitized loan pool and the due diligence process would be limited a security structure analysis. Also, the company maintains a level of diversification in a quasi-real estate investment, but does not suffer from the real estate mortgage RBC category, if the security is highly rated.

Two of the three securities analyzed later in this paper exemplify these two different bulk sale strategies. The real estate assets that back Security Two were purchased from an insurance company. The purchaser then placed debt on the properties in the form of a CMBS issuance. Security Three represents another insurance company's real estate strategy. In this case, the insurance company (in conjunction with its investment bankers) securitized a large portfolio of real estate mortgage assets. The lower rated classes were sold, but the insurance company retained ownership in the investment-grade classes of the issuance. [23]

While the RBC rules were not created to measure competitiveness, they create an incentive to avoid real estate investments. However, some insurance companies have re-entered the market with available capital to finance real estate projects. Since the real estate RBC capital weight is influenced by the company's past record in real estate, these companies probably have ratios that can afford the real estate weight by the RBC. Since

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[23] Bonds rated BBB or above by Standard & Poor or Baa or above by Moody's Investor Service are considered investment grade bonds, whereas lower-rated bonds are classified as speculative grade or junk bonds.

the national market, on the whole, is perceived to be at least at the bottom of the cycle, real estate lending is considered a safe investment by some companies. Other companies, who can not afford the higher RBC category or who do not have the risk capacity for new real estate investments, will stay away from direct real estate participation.

While the rules prevail, investments in the CMBS market offer an alternative to mortgage lending and equity purchases. The many variations of CMBS products allow an insurance company to invest in real estate-like products with bond-like characteristics.

2.3 New Developments in the RBC Rules

Some investors were concerned that the NAIC would potentially re-classify CMBS purchases as real estate mortgages. This fear was realized during 1995 when the NAIC questioned the treatment of rated classes of a CMBS. Apparently, the NAIC believed that some of the CMBS transactions, especially the single asset CMBS, contained risks similar to those of commercial mortgages and should be classified as a commercial mortgage for RBC purposes. A summary of the February 7, 1995 meeting, as reported by Solomon Brothers, indicates the concern of the NAIC.

> One can view insurers' move to securitized forms of real estate related assets as either a response to general environmental conditions (such as capital market developments) or alternatively as a response to regulatory inducements. In reality, insurers increasing attraction to such assets is motivated by some combination of these two incentives. The IAWG [a sub-group of the NAIC] discussed the extent to which high, and possibly inappropriately high, AVR [Asset Valuation Reserve] and RBC mortgage loans factors have been responsible for insurers' interest in securitized forms of real estate related assets. Insurers prefer real estate related securities contained on Schedule D to the mortgage loans contained on

Schedule B in large part because the security investments are subject to significantly lower AVR and RBC charges.[24]

Schedule D and Schedule B refer to the annual reporting forms insurance companies are required to fill out. Schedule D reports bonds whereas Schedule B reports direct real estate investments. The implication is that the NAIC believed that insurance companies were investing in securitized real estate because the classifications were less severe; the insurance companies were inappropriately manipulating the RBC system. The NAIC may have believed that the insurance companies were deceiving the NAIC, and indirectly the public, by not properly accounting for their capital reserves.

The incentives to invest in the rated securities over commercial mortgages is more apparent for those insurance companies with a poor commercial mortgage delinquency rate than for those companies with a strong real estate record. The RBC factors are much higher for companies with a inferior commercial real estate debt record than for those with a credible history. Presumably, the insurance companies with the negative commercial real estate records are the ones that need the RBC rules the most. So, any manipulation of the rules may put the policy holders at risk. The following chart summarizes the previously presented RBC chart according to the classifications of Schedule D and Schedule B assets.

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[24] Fliegelman, Arthur, 1995, "CMBS on Ice: NAIC De Facto Moratorium," Salomon Brothers: United States Fixed-Income Research Insurance Strategies, March.

	Risk Based Capital Factor
Schedule D Asset Classes	
Treasuries	0.0%
NAIC 1 (singe-A to triple A securities)	0.3%
NAIC 2 (triple-B securities)	1.0%
NAIC 3 (double-B securities)	4.0%
NAIC 4 (single-B securities)	9.0%
NAIC 5 (triple-C securities)	20%
NAIC 5 (securities in default)	30%
Schedule B Asset Class	
Single and Multifamily Mortgages	0.25% to 1.5%*
Commercial Mortgages	1.5% to 9%*

* Range depends upon individual insurance company portfolio's recent delinquency history as compared to the industry average

Source: Lehman Brothers MBS and ABS Strategies February 9, 1995

The possibility of including CMBS as a Schedule B asset was widely disputed by many insurance company professionals. In May, 1995 the NAIC came to a "quick and surprising end".[25] The NAIC concluded that a rated CMBS will be treated as security eligible for Schedule D and will be treated in a manner equivalent to all other corporate debt with the same rating, determined by the NAIC.[26] The cloud that surrounded the CMBS market, especially the single asset CMBS, has lifted. Now investors may look at the relative value of a CMBS compared to another investment based on the credit quality of the investment.

2.4 Commercial Mortgage Backed Securities as an Investment Option

With the uncertainty of the classification of a CMBS resolved, the CMBS market has generally continued to be a better value compared to other investments. The most relevant comparison is corporate bonds. Both senior and subordinate bonds continue to

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[25] Fliegelman, Arthur, 1995, "A Quick and Surprising End," Salomon Brothers: United States Fixed-Income Research Insurance Strategies, May.

[26] NAIC treatment of CMBSs that are unrated is still unclear. A study is ongoing to definitively decide the permanent treatment of such securities. Since most CMBS classes are rated, this uncertainty probably will not seriously affect the CMBS market.

offer value compared to comparable corporate bonds. The following chart, reported by Lehman Brothers in its January 13, 1995 Fixed Income Research MBS and ABS Strategies Report, illustrates the average value, in basis point spreads, of 5 year average life CMBS securities compared to other 5 year average life corporate securities.

Basis Point Spread Comparison Between CMBS and Corporate Securities

Security	AAA Rating	AA Rating	BBB Rating	BB Rating
CMBS, New Origination (call protected)	80	N/A	N/A	N/A
CMBS, existing collateral	95	125	240	500
Corporates, Finance Co.	38	52	79	275

As the chart indicates, the generic value of a CMBS compared to a comparable corporate bond is greater, regardless of the rating. The spread differential is at least partially attributed to the newness of the market and lack of information in the real estate market. Some of the spread difference may also be due to investor disdain toward real estate investments. Additionally, the CMBS market is not as liquid as the corporate debt market; consequently, the market demands a spread differential for illiquidity. The lower rated CMBS display the most potential for spreads to tighten, but, for now, these classes may still offer return potentials that are greater than the risks.

The 15 basis point differential between a CMBS backed by call protected new loans and a CMBS collateralized by existing loans suggest that the market values call protection over loan seasoning. Even though seasoned loans may be less likely to default than newly issued loans, prepayment risk appears to outweigh the positive effects of loan seasoning.[27]

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[27] Synderman, Mark P., 1994, "Update On Commercial Mortgage Defaults," The Real Estate Finance Journal, Summer.

Another level of comparison is *within* the CMBS market. The following two charts highlight the relative spread differentials between different rated classes of two different types of CMBS securities. The first chart is for a single, high quality borrower, newly originated, call protected bullet loans. The class A properties have performed without any delinquencies. This type of security represents the probably represents the best available CMBS product type.

Basis Point Spreads for High Quality Single Borrower-Multi Asset CMBS

Rating	5 Year Fixed	10 Year Fixed	5 Year Floating - Capped
AAA	70	75	LIBOR + 45
AA (Senior)	85	90	LIBOR + 65
AA (Mezzanine)	95	100	LIBOR + 70
A	130	135	LIBOR + 110
BBB	175	180	LIBOR + 170

Source: CS First Boston, June 1995

The following chart is indicative of the basis point spread of a RTC (and similar pools) with mortgages originated in the late 1980s. The pools contain multiple borrowers, mixed assets and the assets are located in multiple markets. The security does not benefit from call protection.

Basis Point Spreads for RTC-Like CMBS

Rating	3 Year Fixed	5 Year Fixed	7 Year Fixed	10 Year Fixed	3 Year Floating-Capped	5 Year Floating - Capped
AAA	80	95	110	115	LIBOR+ 45	LIBOR + 45
AA (mezzanine)	95	110	120	120	N/A	N/A
A	145	145	150	155	N/A	N/A
BBB	200	205	210	215	N/A	N/A

Source: CS First Boston, June 1995

Comparing the spreads of the typical CMBS with the best available credit with another CMBS with probably the worst available credit indicates some interesting differences.

The first and most obvious difference is that the CMBS with inferior collateral generally requires a higher spread. The one exception is for the AAA rating, 5 year bond with a floating rate; the spreads are exactly the same at LIBOR plus 45 basis points. This phenomenon is perhaps attributable to the level of subordination that benefits the AAA certificate holders. Or perhaps, floating rate paper is more desirable to investors who in turn sacrifice some credit risk for this kind of bond.

The second noticeable comparison between the two charts relates to the time frame of the bonds. The basis spread is not as wide for the 5 year fixed rate bonds as it is for the 10 year fixed rate bonds. The difference of the 5 year bonds ranges between 15 and 30 basis points, while the difference of the 10 year fixed rate bonds ranges from 20 to 40 basis points. The market appears to be compensating for the risk of a longer bond for all rated classes. This difference appears reasonable because, generally, the potential for default is greater for a longer time frame than for an investment held for a shorter time frame.

The other circumstances that may be contributing to the differences in the spreads need to be discussed in further detail. The following chapters discuss those differences based on the three CMBS studied. This discussion looks at the differences within the three available CMBS product types: single asset, single borrower (Security One); multiple asset, single borrower (Security Two); and multiple assets, multiple borrowers (Security Three).

CHAPTER 3 - REAL ESTATE COMPARISON

Many of insurance companies have followed the same path of real estate activity as described in Chapter Two. The relative advantages of commercial mortgage backed securities have been realized and more and more companies are realizing the advantage when CMBSs are added to the company's portfolio. The CMBS investments diversify the portfolio and allow a controlled level of real estate exposure. Additionally, CMBS investments offer yields that, in many cases, are better than that of other investments.

This thesis focuses on the CMBS activity of one particular insurance company. This Company, like the insurance companies described in Chapter Two, divested many of their real estate holdings (equity and debt), but still sought real estate-like products. This Company was attracted to the yield potential and the diversification benefits of the CMBS market; today, CMBSs have a permanent place within the Company's fixed income portfolio. The Company bought numerous CMBSs since the market experienced its explosive growth in 1990; its purchases have totaled about one billion dollars since that same time.

3.1 Introduction to Specific Securities Studied

Three securities selected to study depict the typical product type that is available in the market. The complexities in the CMBS market allow investors to categorize the market in numerous ways. However, the most simple and straight-forward method is based on the number of borrowers and the number of assets in the securities. The securities selected to study are indicative of the product type based on that criteria. The following summary presents the three securities studied:

	Security One	Security Two	Security Three
Number of Assets	One	Many	Many
Number of Borrowers	One	One	Many

Upon the request of the insurance company who provided the data and the investment bankers who issued the securities, the securities studied are disguised in name. Nonetheless, these securities exemplify both the CMBS market and product that appeals to the Company. The securities studied were all new issuances when they were bought, and the prospectuses and internal analyses were the only available documentation available to analyze.

Consistent with the CMBS market, the prospectuses contain an extensive level of legal documentation. The investment bankers for each security were different and, as a result, the prospectuses are not identical in terms of information presented. However, the same general information is contained in each prospectus, and each security differentiates itself by information on the real estate assets, the specifics of the loan pool and the security structure.

This chapter and the next chapter compare the three securities in an effort to extract an understanding of the CMBS market and the relative advantage (or disadvantage) of one security over another. For organizational purposes, this chapter is dedicated to the factual descriptions of the three securities and the real estate characteristics. The next chapter focuses on the structural differences.

3.1.1 Security One

Security One is backed by a single loan that is secured by a large regional mall. This single property CMBS is a private placement categorized under the Securities and Exchange Rule 144A. This 1990 rule allows the sale of unregistered securities among qualified institutional buyers (QIBs). In spite of the private placement, the documentation resembles the public standards for securitization. Most single asset CMBS are structured as a "144A". Additionally, the majority of the single asset securities are secured by regional malls. The stability of this market and the relative value of regional malls make regional malls an excellent candidate for single asset securitization.

This specific security was issued in November, 1994. The $152 million pass-through issuance is divided into five classes: A-1, A-2, B, C and D. The security also contains a residual piece that is unrated and not offered for sale.

The real estate that backs the certificates contains about 1.5 million square feet. The improvements are situated on a 116 acre site, which includes land owned by the anchors. The mall opened in 1986 and, like most regional malls, contains a diverse mix of regional and local tenants. The mall is about 95% occupied. The issuance is divided into the classes as follows:

Security 1 - Single Asset CMBS

Class	Certificate Balance	Percentage of Total Pool	Pass-Through Rate	Scheduled Maturity	Rating (Fitch)
A-1	$52,500,000	34.5%	0.55% + LIBOR	10/22/01	AA
A-2	$52,500,000	34.5%	8.33%	10/22/01	AA
B	$16,000,000	10.5%	8.73%	10/22/01	A
C	$7,600,000	5.0%	9.13%	10/22/01	BBB
D	$23,400,000	15.4%	13.12%	10/21/24	BB

The Class A-1 Certificates bears interest during the initial one month interest accrual period (starting in November, 1994) at 5.49% and for each accrual period thereafter at LIBOR plus 0.55% per year. As additional security for the Class A-1, the borrower obtained a Rate Protection Agreement that limits the interest rate payable to 8.15% over LIBOR. The remaining classes pay the certificate holders at the outlined fixed rates.

The principal assets will be two mortgage loans aggregating $152,000,000. The first or senior loan consist of the Class A-1, A-2, B and C components totaling $128,600,000. The second loan is a subordinate note of $23,400,000 which equals the balance of the Class D certificates.

Payments on the Component D note depends on the amount of available cash flow after payment of the senior financing, property operating costs and other items. As long as the senior mortgage notes are outstanding, foreclosure remedies or other enforcement rights

for payment under the Component D mortgage will generally not be available. Additionally, the Class D certificate holders may make cash payments to cure monetary defaults under the senior mortgage. As a result, the Class D certificates resemble equity, not straight debt.

3.1.2 Security Two

Security Two is secured by 29 assets that are diversified by product type and location. This security is fully cross-collateralized and cross-defaulted with only one borrower. The total size of the security is $226,489,544 and it was issued in October, 1994. The issuance is divided into six classes: A-1, A-2, B, C, A-1XP and A-2XP. The summary of the classes is as follows:

Security 2 - Diversified CMBS

Class	Certificate Balance	Percentage of Total Pool	Pass-Through Rate	Scheduled Maturity	Rating (Fitch)
A-1	$44,965,665	19.9%	0.70% + LIBOR	4/01/01	AAA
A-2	$107,134,335	47.3%	8.50%	4/01/04	AAA
B	$35,100,000	15.5%	8.65%	4/01/04	AA
C	$39,289,544	17.3%	8.80%	4/01/04	A

The Class A-1 will pay the certificate holder LIBOR plus 0.70% per year, subject to a 11.81% maximum. Class A-1XP is an interest only strip with a notional balance equal to the Class A-1 principal balance. Class A-2XP is a call protected excess interest class whose notional balance equals the sum of the principal balances of Classes A-2, B and C.

The real estate that backs these securities include 29 cross-collateralized and cross defaulted properties. The portfolio has properties that are located in 15 states. The product type includes 17 office buildings (58% of the loan balance), 7 multifamily buildings (30% of the loan balance), 1 retail building (6% of the loan balance) and 4 hotels (6% of the loan balance). The portfolio was acquired for $417.97 million from an insurance company's portfolio.

3.1.3 Security Three

Security Three is a liquidating structure whereby the assets in the pool are either non-performing or will be sold over a period of time. Because many of the loans are considered non-performing, the strategy is to liquidate the assets and then allocate the sales proceeds. Like Security One, Security Three is classified as a private, 144A security.

Security Three is a somewhat unique security because it is actually a CMBS that is secured by the assets of another CMBS. The multi-layering of the structure allows for a superior level of subordination that may not otherwise be available, but it also complicates the security enormously.

The original CMBS was issued in 1993. The assets that back that security were another insurance company's mortgage loans. This insurance company retained ownership in several classes of the security, called the Senior Certificates. The insurance company then sold the Senior Certificates and another CMBS was then issued which was backed by the cash flow of the Senior Certificates.

The second CMBS is the security studied here. This December, 1994, $125,000,000 issuance represents a single class offering. The certificate holders receive LIBOR plus 0.25% per year, up to a maximum of 15% per year. The certificates are rated Aa2 by Moody's Investor Service. The final maturity date is January 19, 1999.

Because the Security Three is supported by the cash flow of the Senior Certificates, the December, 1993 CMBS must be analyzed. This CMBS is supported by a loan pool which originally consisted of 193 commercial mortgage loans with an aggregate balance, as of December 1, 1993, of $969,096,844. About 5% of the loan pool was cross collateralized. As of December 5, 1994, the loan pool includes 176 commercial mortgage loans having an aggregate balance of $828,754,672. In one year, the loan balance decreased by 14.5%.

The original CMBS contained twelve classes and the Senior Certificates represent seven classes. A summary of the seven classes of the Senior Certificates, as of December, 1994, is as follows:

Security 3 - Liquidating CMBS - Senior Certificates

Class	Certificate Balance	Percentage of Total Pool	Pass-Through Rate	Scheduled Maturity	Rating (Fitch)
A	$483,737,330	58.4%	6.70%	4/01/01	AA+
B	$77,547,526	9.4%	7.30%	4/01/04	A+
C	$48,468,059	5.8%	8.00%	4/01/04	A-
P	$5,717,945	0.7%	0%	4/01/04	N/A

The Class P certificates are a principal-only class. The Class W, X and Y are interest only classes that have notional balances of about $715 million, $610 million and $51 million, respectively.

3.2 Property Risks

One of the first steps in the analysis of a CMBS is a determination of the overall quality of the real estate assets. The interpretation of quality may be somewhat subjective depending on the investor. Some investors rely upon the prospectus to make such a determination. Other investors may actually inspect the properties. Often, information about the assets is supplemented by third parties who have inspected the properties such as the investment banker and the rating agencies.

Generally, information about the real estate assets is not exhaustive in a CMBS issuance. The real estate information that is included in CMBS issuance is not standardized. The three securities studied are not an exception.

The information contained in the prospectus for Security One and Security Two is adequate to arrive at an opinion of the quality of the assets. Security One is a secured by a relatively new mall, in an affluent area. The strong occupancy and sales history suggest that this regional mall may at least perform with the majority of all other regional malls.

Security Two is secured by a variety of assets. However, the level of information provided in the prospectus in Security Two exceeds that of Security One; it is much easier to get an understanding of the assets for Security Two. Occupancy rates, average lease rates per building, lease expirations, tenant concentration, and for the hotel properties, average daily rates and average occupancies are presented. Based on this information, the asset quality appears high for all property types.

Security Three, in contrast to Security One and Two, contains little information on the property assets. It is difficult to evaluate property specific risks such as tenant risks because neither the 1994 prospectus nor the 1993 prospectus contains detailed property data. Several things are known, however. First, the loan pool benefits from seasoning because the loans were originated from the mid 1970s to the late 1980s. Loan seasoning generally benefits the loan pool.[28] Second, a large portion of the loans have been handled by the Special Servicer who manages "problem" loans. This fact appears to contradict the first point about loan seasoning.

The influence of problems loans was significant during the first year the securities were issued. From 1993 to 1994, the Special Servicer oversaw $377 million of the loan pool which equates to 39% of the 1993 loan pool Although some of the specially serviced loans have been placed back to the Servicer, the large amount of problem loans suggest that the many of the assets may be classified as non-performing loans. A non-performing loan has more a chance of being modified or even foreclosed upon. It is therefore clear that the overall quality of the assets may not be as high as Security One or Security Two.

3.2.1 Diversification by Property Type

Because of the newness of the market, little standardization in the CMBS market has occurred. Not surprisingly, the CMBS market does not have a consistent product type or product type mix. A gamut of real estate assets have been securitized, from a single asset

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[28] Ibid.

to many assets of the same type to various, unrelated assets classes. The trend, though, appears towards CMBSs backed by multiple product types. For 1994, 50% of the CMBS issuance, by dollar volume, was of a mixed collateral format.[29]

Two of the three securities studied within in this paper are backed by multiple assets. A mixed collateral format may contain some level of diversification where the cash flow may experience less volatility and, accordingly, the portfolio may contain less risk than an undiversified portfolio. Considering the non-homogeneous aspects of real estate assets, generalizations across the entire real estate industry about property type diversification are difficult to make.

However, it is not surprising that a portfolio's risk may be reduced by property type diversification. Various studies have cited the benefits of property type diversification by testing the correlation of several types of real estate assets. The conclusion of these studies is that the efficient trade-off between risk and return depends critically on the property types in the particular portfolio. In those studies, a retail - residential combination displays a particularly low correlation. An office - retail combination shows a higher correlation, but it is still less than one which suggests that an office - retail combination may still provide diversification benefits.[30]

Security Two and Security Three both contain a residential component in the portfolio; however, Security Two contains almost two times as much of the loan pool of multifamily assets as Security Three. This fact does not imply that Security Two is less risky that Security One. The combination of all the risk factors must be evaluated before any determination may be made about overall risk.

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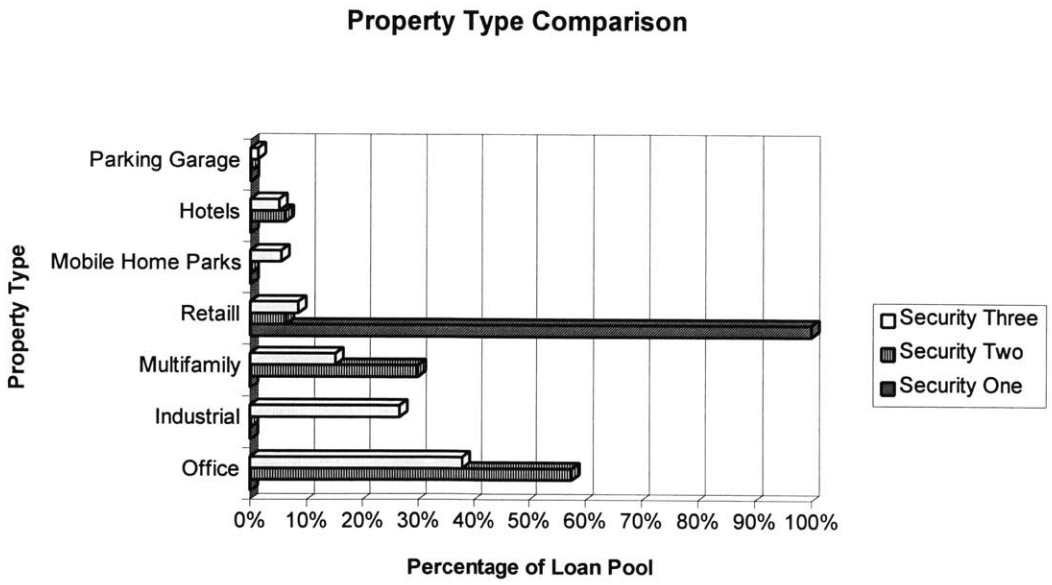
[29] Nomura Securities International, Inc., 1995, "Commercial Real Estate Quarterly," Global Real Estate Research, January, page 7.

[30] Miles, Mike and Tom McCue, 1982, "Historic Returns and Institutional Real Estate Portfolios," AREUEA Journal, 10-2 and Firstenberg, Paul S., A. Ross and R. C. Ziesler, 1987, "Managing Real Estate Portfolios," Goldman Sachs & Co.

One clear point is that the portfolio that backs Security One contains decidedly more risk than the real estate portfolio of Security Two and Security Three. Since only a single asset backs Security One, it does not have a mechanism to absorb all of the changes that affect the real estate property market. The value of the underlying assets of Security One probably displays more volatility than that of Security Two and Security Three. A factor that affects the regional mall market (the asset class that backs Security One) has a much more of a pronounced effect on the cash flow than if the portfolio were diversified.

Even though Security Two contains property type diversification, Security Two is significantly influenced by the office market (over 50% of the loan pool is secured by office buildings). Nonetheless, Security Two is cross collateralized and cross defaulted which implies that all of the property types influence the loan pool in generally the same magnitude. The following chart illustrates the percentage of property types as a percentage of the total loan pool for all three securities.



Although all real estate property types inherently contain risks, several types of real estate assets are perceived to contain more risks than other property types. As a rule of thumb,

hotels contain the most risk and multifamily buildings contain the least risk. Retail, office and industrial buildings fall somewhere in between these two property types. Retail, office and industrial properties differentiate themselves by location and the quality of the building and the tenants. A generalization as to the relative risk between retail, office and industrial buildings is not easily made.

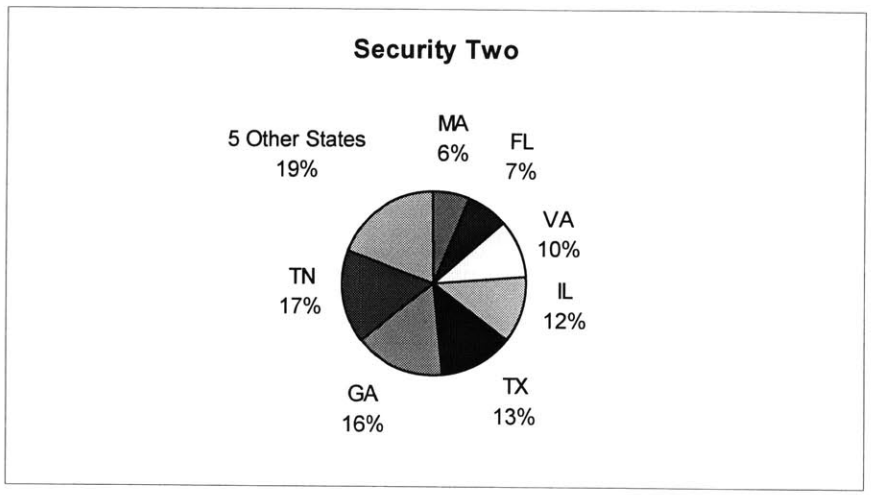
The securities analyzed within this paper contain a mix of property types, but retail and office comprise the largest percentage of the loan pools. Security One is 100% backed by a regional mall. Security Two and Security Three have a more diverse asset composition, but office has the largest influence on both of the loan pools. The investors should, therefore consider the effects of such a concentration of the loan pool.

Regional malls are usually attractive because of the barriers to entry in the market. However, one potential risk to the investors of Security One is that a competitor is building another regional mall within the same market area. The effect of the new mall is yet unknown, but intuition suggests that the mall may need to reposition itself to successfully compete with the new mall and maintain its sales level.

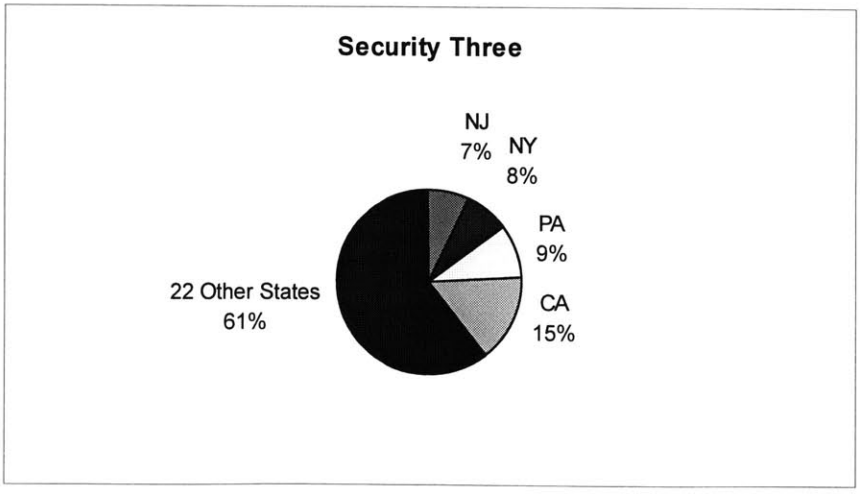
Office buildings, across the country, have not performed well in the last few years. Although some office markets are rebounding, many office markets are still experiencing vacancies above 10%. Since both of the mixed collateral portfolios are dominated by office buildings, these loan pools may potentially be overexposed to property type risks.

3.2.2 Diversification by Location

In addition to property type diversification, Security Two and Security Three also contain location diversification. As result, the effect of regional economic factors and local competition are less noticeable. The following charts illustrate the differences of the regional portfolios by state. A chart for Security One is not included because 100% of the portfolio is located in Connecticut. States which comprise less than 6% of the loan pool are aggregated for ease of presentation.



The loan pool of Security Two is dispersed among several states; the assets that back Security Three are located in many states in the US. Assets located in California comprise a large portion of the loan pool of Security Three. This may be considered a risk because California is perceived as a market in trouble. Whether this perception is accurate or not, the rating agencies have recently considered California as a state to watch. This year the rating agencies downgraded several CMBSs partially because of the concentration of assets in California.



Since the portfolio of Security Three is diversified by location, some of the risks of the conditions in California will be absorbed by the remainder of the portfolio. However, the studies that have been completed on location diversification suggest that simple diversification on a state-by-state basis is not as effective as some would believe. In a study prepared by Hartzell, Schulman and Wurtzebach, a new approach to diversification was taken where the location and the underlying economic factors of a region were considered together.[31] This approach divided the country into eight regions based on common economic conditions. Their findings suggest that that location plays an important role in diversification, and the beneficial effects of diversification may be heightened when a sophisticated approach is taken.

With over 50% of the 1994 issuance secured by diverse assets, the multi-asset market seems to be headed toward broadly diversified pools as the standard CMBS. However, a standard of diversification, in either property type or location, has yet to evolve. The market appears to assume that diversification effects are realized by amassing many assets in what appears to be a random manner. Assuming that the due diligence process is adequate, then the investors may benefit from diversification. The trade-off to the investor is that it is much more difficult to analyze all of the assets in a multi-asset CMBS compared to a single asset CMBS.

A recent study prepared by Childs, Ott and Riddiough suggested that the latter hypothesis may actually be false.[32] These authors tested the various effects on a multi-collateral CMBS whose assets are less than perfectly correlated. Their findings suggest that diversification may actually be *detrimental* to the first loss class of a CMBS and beneficial to the higher-rated tranches.

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[31] Hartzell, David J., David G. Schulman and Charles H. Wurtzebach, "Refining the Analysis of Regional Diversification for Income-Producing Real Estate", The Journal of Real Estate Research, Volume 2, Number 2, Winter 1987.

[32] Childs, Paul D., Steven H. Ott, Timothy J. Riddiough, "The Pricing of Multi-Class Commercial Mortgage-Backed Securities", February, 1995, MIT Center for Real Estate.

Since the first loss class absorbs most of the default risk, these certificate holders wish to avoid *any* default. The owners of the higher rated classes, on the other hand, wish to have the variance of losses minimized so that its principal balance is unaffected. Diversification would minimize the variance of losses in the loan pool, but depending on the size of the first loss piece, the losses could erode the principal balance of the first loss class. The undiversified pool, exemplified by a single asset CMBS, allows the certificate holders of the first loss class to create a "gamble" that there will be no defaults (i.e., higher loss variance is beneficial since the downside risk is limited).

Of the securities studied, Security Two and Security Three are diversified. Yet, Security Two differentiates itself from Security Three by Security Two's 100% cross collateral provisions. The cross collateralization of Security Three is so insignificant that it can not be considered comparable. Cross collateralization essentially "bundles" all of the loans into one loan because a default on one asset would trigger default on the entire loan pool.

The cross collateral feature negates the negative effect of diversification on the first loss classes. While Security Two is secured with many loans, the behavior of this loan is similar to that of a single asset security like, Security One. However, Security Two realizes the diversification effects -- risk reduction--when compared to Security One.

3.3 Valuation of Real Estate Assets in a CMBS and Key Ratios

The investor, especially the first loss piece investor, is concerned that the value of the collateral is at least equal to, or greater than, the amount of the total security. When the value of the underlying security exceeds the amount of the issuance, the credit enhanced security provides the investor with protection from unforeseen losses. The following table highlights and summarizes the characteristics of the loan pools:

	Security One	Security Two	Security Three
Number of Assets	One	Many	Many
Number of Borrowers	One	One	Many
Total Issuance	$152.0 million	$226.5 million	$125.0 million
Balance of Loans	$152.0 million	$226.5 million	$828.8 million
Estimated Value of Real Estate Assets	$240.0 million (63% loan to value)	$418.0 million ** (54% loan to value)	N/A
Cross Collateralized	No	100%	About 5%

* Based on an appraisal as of September, 1994.

** Based on the 1993 acquisition price of the portfolio from an insurance company.

As the above table indicates, the methods to value the underlying real estate collateral are not standardized in the CMBS market. Some issuances have appraisal reports, some rely upon the Servicer's estimate of the value and others rely on some other method such as last year's cash flow capitalized at an analyst's determined capitalization rate. In all cases, estimating value involves a certain degree of subjectivity. Appropriate judgment is required to make future projections about the market, the competition and the property cash flows. Because of all of those projections and the subjectivity involved, real estate values cannot be estimated precisely. The chance of overestimating or underestimating value either creates an unforeseen risk or an opportunity for investors.

3.3.1 Loan to Value Ratio and Debt Coverage Ratio

Despite this possibility, investors must rely on these estimates of real estate values to determine the quality of the underwriting of the loans that secure the CMBS. Since most lenders impose maximum loan to value ratios when determining the amount of the loan, the loan to value ratio provides a mechanism to compare different loans as to their relative risk. As the loan to value increases, the risk of the borrower defaulting increases. Because real estate loans are typically made on a non-recourse basis, the borrower has less of an incentive to continue to pay the loan when the loan to value ratio is greater than one.

In the traditional lending market, the borrower may not ruthlessly default when the loan to value ratio exceeds one.[33] However, the borrower and the lender may not have the same relationship in the securitized market. The lender may be aware that this loan could be sold for securitization and the borrower may not interested in preserving a relationship with a CMBS servicer. These incentives could result in the lender making riskier loans and/or more occurrences of borrower default. The potential conflict of interest may, therefore, cause borrowers to default more ruthlessly which creates additional risk to the security.

A question remains about what constitutes an estimate of the value. Consider the $418 million acquisition price of the assets that back Security Two. The acquisition price may be used as a proxy to the currently value, but there is no way to determine if the price is based on an arm's length transaction. If the acquisition price was motivated by the seller's incentive to dispose of the assets, perhaps the value is understated. On the other hand, the sale price may be high because the buyer sought to buy only this specific portfolio. In either case, the acquisition price should only be used as general measure of the value of the real estate assets.

Although the loan to value ratio represents a meaningful benchmark, some investors do not rely on this measure. Instead, investors rely on the debt service coverage ratio. In fact, Security Three does not have an explicit value of the real estate assets that back the securities; therefore, the investor must rely on the debt service coverage ratio. However the investor may potentially break the DSCR into its components: net operating income and annual debt service. The net operating income could then be capitalized and used as a substitute for the value.

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[33] Sometimes, however, a borrower will continue to pay on a loan whose assets are less than the outstanding loan balance. This borrower may wish to preserve his or her reputation and relationship with the lending community. The borrower may also believe that the value of the assets are temporarily impaired; the potential for appreciation may out weigh the opportunity to default on the loan.

Independent value estimates are generally found in single asset securities, but appraisals are sometimes provided for multi-asset securities as well. However, for portfolios with a significant amount of assets, the cost to obtain many appraisals may not justify the added security that the loan to value benchmark provides. Nevertheless, a security that contains an appraisal(s) may be more attractive than a security without appraised values. An investor may use both the debt service coverage ratio and the loan to value ratio to become comfortable with the loan underwriting standards. The following table summarized the total loan to value and debt service coverage ratios for the securities studied.

Ratio	Security One	Security Two	Security Three
Loan to Value	0.63	0.54	N/A
Debt Service Coverage	1.90	2.16	1.27

Security One is only security that relies on an independent appraisal. A single asset security is perceived as a security with more risk than a multi-asset security, and the investors may not want to solely rely on the debt service coverage ratio. The loan to value creates another benchmark that is tied to an independent opinion of the market value of the assets. The loan to value ratio of Security One is 0.63, which by standard loan underwriting practices is a conservative loan to value ratio. However, the last twelve months of net operating income was $17 million. This implies that the going-in capitalization rate is about 7% ($17 million/$240 million). A 7% capitalization rate may be appropriate for regional malls; however, based on the risk free rate plus a risk premium for real estate, the going-in capitalization rate and, therefore, the value estimate may be aggressive.

Security Two contains stipulations in the security that if the loan to value ratios defined by each property type falls below a certain level, cash flow after debt service and all operating cash flows cannot be distributed to the borrower. The following table highlights

the property type loan to value ratio thresholds and the ratios, by property type, as of the date of the issuance. The weighted restricted debt service coverage ratio is approximately 1.27.

Property Type	Restricted DSCR
Multifamily	1.15
Retail	1.20
Office	1.30
Hotel	1.70

Security Three contains a DSCR of about 1.27. A typical ratio for a newly originated loan is about 1.25. Since the loans in Security Three are seasoned, amortizing loans, this loan to value ratio would normally be expected to be higher. This ratio is further testimony of the relative risk of the underlying securities.

3.3.2 Subordination

The aggregate debt service coverage ratios and loan to value ratios are useful for determining the relative risk of each loan pool in the aggregate. However, the investor is also interested in evaluating the risk in each class. Because of the subordination contained in the securities, one class may represent less risk than another class.

Subordination is the process of sharing risk of credit losses disproportionately amount two or more class of securities. In its simplest form, called senior/subordinated structures, two classes of securities are collateralized by the pool mortgages with one class providing the credit enhancement for the other. The subordinated class is in a first-loss position - it absorbs 100% of the losses experienced on the collateral until cumulative losses exceed the amount of the subordinated class available to absorb such losses. When delinquencies and defaults occur, cash flows[34] otherwise due to the subordinated class are diverted to

[34] Depending on the security, cash flow may be principal and interest or it may be principal only.

the senior class to the extent required to met its scheduled principal and interest payments. Utilizing subordination, it is possible to create highly rated securities from collateral of all levels of quality.[35]

The following table illustrates the benefits of subordination. The higher rated classes are more protected from losses than the lower rated classes. The lowest rated class is protected by the level of equity, if any, in the security structure. The figures presented below are based on the rated classes based on how the losses are allocated. Equity, if any, is not included in this analysis, so the figures may not add up to 100%. The figures below imply the amount of principal that would have to be eroded away before a particular class would be affected.

Levels of Subordination by Class and Rating

Security 1	AAA	AA+	AA	A+	A	A-	BBB	BB
A-1			**31%**					
A-2			**31%**					
B					**20%**			
C							**15%**	
D								**0%**

Security 2	AAA	AA+	AA	A+	A	A-	BBB	BB
A-1	**33%**							
A-2	**33%**							
B			**17%**					
C					**0%**			

Security 3 - Senior Certificates	AAA	AA+	AA	A+	A	A-	BBB	BB
A		**42%**						
B				**32%**				
C						**26%**		

[35] Fabozzi, Frank J., Editor, 1995, The Handbook of Mortgage Backed Securities, Probus: Chicago, Illinois, page 526.

The lowest rated classes do not benefit from any subordination. Therefore, the subordination for those classes equals zero. For the next highest class, it benefits from subordination of the lowest rated class. For example, in Security One, the BB class does not benefit from subordination; the BBB class benefits from the subordination of the B class which comprises 15% of the loan pool. The subordination of the highest rated class, benefits from all of the classes below that class. For Security One, 31% of the loan pool is subordinated.

Comparatively, the AA class and the A class of Security One contains superior subordination to the same rated classes of Security Two. These benchmarks may be used as relative risk comparison of the different classes. Based strictly on subordination, the AA and A classes in Security One are more protected from losses than those classes in Security Two.

Remember, Security Three is a fairly unique situation. This security consists of $125 million which is secured by the Senior Certificates illustrated above. Security Three, therefore, is protected by both the lower rated classes and the senior classes in the event of any losses. The subordination is 85%; in other words, 85% of the loan pool would have to be eroded before Security Three would be negatively affected. The protection offered in Security Three, by far, exceeds the subordination of Security One and Two. This level of subordination presumably accounts for the lack of real estate information and the amount of non-performing assets.

3.4 Environmental Risk

Every lender is concerned with environmental issues; the investors in a CMBS are not different. However, with securitized debt the risk of the negative effects of environmental contamination are much more pronounced. As mentioned previously, the incentives that traditional lenders and borrowers espouse--maintenance of reputation and relationships--may not exist with securitized debt. The result may be that lenders and borrowers may

enter into riskier endeavors. Additionally, the lenders seeking to securitize some of its assets may select assets with the potential for environmental contamination to be included in the loan pool. The lender may be adversely selecting the assets and keeping the best assets for its own account.

The investors in CMBS must be aware of these possibilities. Environmental laws typically state that current owner is responsible for environmental clean-up, regardless if the contamination was committed by another owner. These laws affect every lender when the borrower defaults. If the Servicer suspects that the site is contaminated, then the Servicer must be wary of exercising too much control over the property. If the Servicer, acting in behalf of the certificate holders, acts like an owner during a loan work out, the certificate holders may be liable for the clean-up.

Environmental issues are especially troublesome if the Servicer attempts to exercise its default remedies. The Servicer must use judgment to determine if the property contains unacceptable risks if default remedies were attempted because clean-up cost may be the certificate holder's liability. The Servicer may decide that the costs to cure the environmental concerns out-weigh the present value of the clean property. If so, the rights to foreclosure would not be exercised. Consequently, principal on the certificates will be lost which means that the first loss classes are particularly vulnerable to environmental risks.

To prevent such a situation, most issuances call for formal environmental reviews, called Phase I and Phase II studies. A Phase I study is a limited environmental study to determine if basic contaminants exist on the site; a Phase II study is a more detailed and comprehensive environmental analysis. The reports attempt to inform the lender of any potential risk; though, the reports are often not exhaustive as to every environmental concern. Since environmental concerns evolve over time, a older Phase I or even Phase II report does not guarantee that all contaminates were found. Nevertheless, these studies are the best available protection to lenders.

The securities studied here have had environmental Phase I reports prepared. The report for Security One determined that the site was "clean". Security Two, on the other hand, determined that a relatively small amount of contaminates on the real estate assets; the total cost to remedy was estimated at $280,000. The borrower pledged 125% of these costs which was placed in an environmental reserve fund to be used to clean those sites. Phase I reports were prepared on the majority of the loans pool of Security Three in connection with the 1993 issuance. The results of those reports are not included in the prospectus. However, in an assumed effort to mitigate some of the environmental concerns the lender entered into a representation and warranty agreement that could result in the lender repurchasing an environmentally affected loan.

CHAPTER 4 - STRUCTURAL COMPARISON

This chapter focuses on the differences and similarities of the security's structural components. The structural composition of the CMBS market differentiates it from the whole loan market because the risk of the real estate investments are divided and allocated to different classes. The financial engineering performed in the CMBS market, in theory, adds value whereby the sum of the value of all of the asset classes is greater than the value of the loan pool before the pool is securitized. This potential, or possible arbitrage opportunity, is created by targeting risk preferences of heterogeneous classes of investors.

Since the CMBS market is a relatively new addition to the bond market, the issuer is given some leeway, subject to control by the rating agencies, to structure the security creatively so that the security is well received in the market. Accordingly, the buyers must be able to analyze the securities so that the risks that are embedded in the security are identified. This chapter identifies some of the more prominent structural risks. The largest concerns, call protection, extension risk, and default risk are discussed. Other structural risks that may be considered less obvious are also presented.

4.1 Call Protection

As mentioned in Chapter One, one of the ways the CMBS market differentiates itself from the residential market is by clauses in the loan documents that reduce or eliminate borrower's ability to prepay the loan. These clauses include lock-out periods, yield maintenance agreements and prepayment penalties. A lock out period provides the certificate holder with absolute call protection and, thus, the security may be more valuable to fixed income investors, such as insurance companies. While yield maintenance agreements and prepayment penalties may dissuade the borrower from prepaying the loan, in an extreme situation, nothing prevents the borrower from prepaying the loan if it is to the borrower's economic advantage to do so.

Like many other features in the CMBS market, standardized call protection does not exist for all securities. Some loan pools may have either lock-out provisions, yield maintenance agreements or prepayment penalties. Other pools may have some variation of the three clauses. Conduit programs may provide the CMBS market with some standardization because the loans in the specific conduit pool presumably are underwritten to the same specifications. However, the increasingly competitive market may cause conduit programs to offer unique lending products in order to differentiate themselves. As a result, standardized call protection clauses may never exist in the CMBS market.

The call protection of the three securities studies are all distinct. The following table highlights the call protection provisions:

	Security One	Security Two	Security Three
Lock-out Period	2 Year	4.4 Years	No
Yield Maintenance	After 2 Years	Yes	Various
Prepayment Penalties	After 2 Years	No	Various

Security One contains a two year lock-out period for all of the classes. However, after two years the borrower may prepay the loan subject to a prepayment penalty. Each class differs as to the amount of the prepayment penalty and how long the prepayment penalty is applicable. If a prepayment occurs, the borrower must specify which component of the loan to apply the prepayment. If the borrower does not specifically designate the component for prepayment, the optional principal payment amount will be allocated sequentially to the Class A, Class B, Class C and Class D Certificates. The following table illustrates the exact prepayment penalties and basis point premiums to be added to a Treasury Index to calculate a yield maintenance for each class in the security.

Prepayment Penalties- Security One

Year	A-1	A-2	B	C	D
3	1%	50 bp	100 bp	150 bp	4%
4	1%	50 bp	100 bp	150 bp	3%
5	0%	50 bp	100 bp	150 bp	2%
6	0%	50 bp	100 bp	150 bp	1%

The call protection in Security One is strong; however, the security provides a window for borrower prepayment. The provisions for Security One allow certain classes to be more exposed to prepayment than other clauses. In particular, the penalties for prepayment on the senior classes appear less sever than the penalties on the lower classes.

Security Two differs from Security One in that it *requires* a prepayment of 20% of the original mortgage balance before any penalties apply. The 20% required prepayment equals the balance of the Class A-1 certificates. Through a combination of scheduled amortization and prepayments, Class A-1 must be paid by April, 2001.

The other classes in Security Two, Classes A-2, B and C, contain a 4.4 year lock-out period. Thereafter, voluntary prepayments are only allowed if the borrower pays a full yield maintenance penalty. The yield maintenance agreement is a "make whole" provision which by its formula is intended to allow the investor to maintain its initial purchase yield through a purchase of U.S. Treasury securities. In this transaction, yield maintenance is computed as the greater of 1% of the par amount being prepaid or the present value of the remaining loan payments discounted at current treasury rates at the time of the prepayment, less the par amount being prepaid. Involuntary prepayments, including casualties and condemnations, also require payment of the yield maintenance, to the extent that the 20% target as has already been reached.

The protection afforded to the certificate holders of Security Two is stronger than the protection in Security One. As a result, the cash flows of Security Two may be more

accurately projected (and average life) compared to Security One because the uncertainty of the timing of prepayments is somewhat limited. As a result, Security Two may be somewhat more valuable than Security One. The average life of Security Three, on the other hand, is not as easily analyzed.

Security Three does not contain a predefined lock-out period as Security One and Two contain. The final maturity date is January 18, 1999, subject to earlier payment in full of the principal balance from the principal portions of the monthly payments. Since Security Three is backed by numerous loans, originated at different years in different lending environments, each loan does not contain standardized loan clauses. Consequently, a broad statement about yield maintenance and lock-out clauses cannot be made. However, many loans were specially serviced during the first year of the security's life which indicates a relative lack of credit quality in either the assets or the borrowers. An often overlooked consideration is that the borrowers may not adhere to the yield maintenance agreements. When this security was purchased, the Insurance Company based their purchase decision on the fact that the security did not contain call protection. The security was viewed as a relatively short term investment.

For all securities in the CMBS market, including the three securities studied, prepayments affect the certificate holders and the attractiveness of the security as an investment. If the prepayment premiums of the underlying loans do not serve as a deterrent for the borrower's prepayment, then the principal and any prepayment premium will be diverted to the certificate holders in the order determined in the security. Prepayments will shorten the duration of all of the classes in the security. Yet, the senior piece(s) will immediately feel a greater effect than other classes because the senior class receives principal payments first. Therefore, the higher rated tranches should be conscious of prepayment risks and consider the possible worst case scenarios that could shorten the life of the securities.

A prepayment is not necessarily the worse occurrence to an investor. If the possibility of prepayment is considered in the purchase decision (and associated pricing decision), then the prepayment risk may be acceptable to the investor. However, if an investment was made with the presumption that the security would be a long term investment, and a prepayment occurs, then the investor may suffer if the principal is received when the interest rates are lower (reinvestment risk).

4.1.1 Release of Collateral

Relating to prepayment, release of collateral is another issue the investors must identify. If prepayments are made, then the borrower, especially in a single borrower, multi-asset transaction, may prepay the loans that are secured by the best assets in the pool. Clauses are typically included in the securities to avoid "cherry picking" assets, so that the certificate holders are not left with a pool of assets that may not be re-financable and further expose the investors to extension risk (discussed in the next section).

The potential for "cherry picking" is only prevalent for Security Two, the single borrower - multiple asset transaction. In this security, the properties can be released from the Trust only if all of the following conditions met. First, the principal payment must equal 100% of the current balance plus 25% of the original balance, less scheduled amortization. Second, after the release, the remaining properties must demonstrate a DSCR equal to the greater of 1.75 or the DSCR without the release. Third, the Escrow account must be fully funded. These clauses appear to be a stringent disincentive for the borrower to partially prepay the debt and seek to release the best collateral in the pool. If the borrower does indeed opt to partially prepay the debt, these clauses appear to ensure that the remaining collateral will be at least as good as the entire pool, before any prepayments.

4.2 Extension Risk

Extension risk relates the possibility that the borrower may not be able to refinance the loan at the end of the term. Typically, real estate loan payments are either based on

amortization schedules that are greater than the loan term, or the payments are based on interest alone, without any principal repayment. In either case, a balloon payment will need to be refinanced at the end of the loan term. The risk that the borrower will not be able to find someone to refinance the property is called refinance risk, extension risk or balloon risk.

If a borrower cannot find an alternative source of financing, the loan may default. The Servicer or Special Servicer will choose to either extend the loan term or foreclose the property. Both options affect the certificate holders. If the loan is extended, then the borrower will continue to pay the debt payments and the certificate holders will continue to receive payments. When the reinvestment environment is positive, then the certificate holders suffer because funds will not be available to invest in other vehicles.

A foreclosure may cause the same problems because the typical time to acquire control and sell a foreclosed property is about a year. The certificate holders will be in the same situation as a loan extension, but the uncertainty surrounding the recovery of funds will be resolved.

Securities that may be more prone to extension risk are structures that have poor asset quality and/or poor location attributes. Older properties and properties located in depressed areas may have added risks because when the loan matures, the properties will only be older and the neighborhoods will not necessarily experience gentrification. Although it is nearly impossible to predict the quality of the neighborhoods several years from now, a subjective determination must be made about the overall future attractiveness of the assets.

Generally, extension risk is negative for the holders of the senior certificate holders. However, for the first loss, interest only and principal only classes extension risk may prolong the receipt of cash flow and delay any realized losses. To the extent that losses are minimized, the certificate holders may increase their yields.

Typically, loans that are large and have not decreased through amortization may have difficulties in re-financing. Security One contains a large single asset that may be difficult to refinance, but usually regional malls are attractive real estate assets and do not have a problem finding financing. Security One has a 0.63 loan to value which, assuming that the property value does not decline over time, will only decrease due to the equity built up in the real estate through amortization. The combination of an attractive asset class and a low loan to value ratio implies that re-financing at the end of the loan term may not be an impediment.

Security Two and Security Three with their many assets may have a problem refinancing all of the assets at the end of the loan. However, the quality of the assets in Security Two appear to be above average which may make it easier to re-finance. Additionally, the underlying loans also contain amortization, which will also increase the chances of re-financing, again, assuming that the property values do not significantly deteriorate. Security Three probably will suffer from re-financing risk, but the potential for defaults seems much more likely. These defaults will put the onerous task of "working out" the loan or selling the assets on the Special Servicer. Therefore, extension risk is prevalent in Security Three, but the extent of that risk may be mitigated by the skill of the Special Servicer.

4.2.1 Scheduled Maturity Date and Final Maturity Date

In an effort to account for the extension risk, most securities include a scheduled maturity date and a final maturity date. The scheduled maturity date is when the loan is due and the final maturity date is several years beyond the scheduled date to account for the extension risk. The length of the final maturity date varies, but generally the range is from three to five years. The final maturity date allows for the borrower to find a refinancing source; the loan usually will not be considered a defaulted loan before the final maturity date.

For Security One, the Servicing Agreement permits the extension of the balloon payment for up to one year after the scheduled loan maturity date, but the final date is three years after the scheduled maturity date for all the classes except the most junior piece, the D Class. Security Two contains a final date that is six years beyond the expected final maturity. Security Three does not contain a final date that differs from the scheduled date.

The final date allows the rating agencies more flexibility to assign a higher rating because a longer extension period suggests that the borrower will be able to find a re-financing source at the end of the loan term. As a result, the borrower may be less likely to default strictly on the borrower's inability to find re-financing. The final date also allows for the time needed for the servicer to foreclose and sell the asset, should the borrower default. For example, in Security Two, a reasonable assumption, perhaps even a conservative assumption, is that all of the properties could be foreclosed and sold within a six year time frame. During that time period, the certificate holders would be paid-off and the security would terminate.

A longer extension period may work for, or against, the investor. For the lower rated tranches, a long extension period may stall foreseeable losses. For the higher rated tranches, the long extension means that the certificate payments will continue, but the investors will not be able to receive their investments. Consequently, the duration of the investment will increase. As mentioned earlier, this uncertainty may be undesirable for the investors.

The extension periods of the securities studied appear within reason. The three years accounted for in Security One appears sufficient to cover the risk of foreclosing. The six years provided in Security Two seems conservative, but may be necessary because of the number of the assets and the location diversity in the loan pool. The extension risk in Security Three seems minimal because the majority of the loans in this pool will probably default before the end of the term and then be sold.

4.3 Default Risk

Default has been mentioned previously because there are so many conditions that can increase the borrower's risk of defaulting. Chapter Three mentions that one cause of default could be an outstanding loan balance that exceeds the value of the real estate that secures the loan. Other factors, not yet discussed, include cash flow problems which could result from lease expirations and capital improvement outlays. Careful underwriting may alleviate some of these concerns, but whenever the loan is non-recourse, it may be extremely difficult to eliminate all of the borrower default possibilities.

Studies have found that the age of the loan, sometimes referred to as loan seasoning, influences the chances of default.[36] Mark Synderman's default study showed that defaults, on average, are pronounced during years one through five of the loan; thereafter, the chance of default dramatically reduces. He hypothesizes that the positive characteristics of loan seasoning may be attributable to the equity built up in the property through amortization. Another possible explanation is that an older loan may have already experienced some form of economic stress and survived. Accordingly, future stresses may be less of an obstacle to overcome and the loan will have less of a chance of defaulting.

These same studies have focused on the year of origination as a possible cause of default. Defaults may be more pronounced when there is a competitive lending environment. In a effort to gain business, lenders may be willing to overlook some underwriting concerns so that the loan may be closed. An ensuing property value decline could, therefore, jeopardize the loan and increase the chance of default. This, in fact, was demonstrated in the default study prepared by Mark Synderman. A significant relationship between

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[36] Synderman, Mark P., 1994, "Update On Commercial Mortgage Defaults," The Real Estate Finance Journal, Summer.

lifetime default rates of a year of loan origination and the cumulative subsequent five-year change in property value was shown.[37]

Two of the three securities do not have seasoning effects. Security Three is the only security that has loans as collateral that are established, but so many of those loans were specially serviced that the benefits of seasoning are questionable for this security. The loans that support Security One and Security Two are new originations. A new loan origination in today's market is perceived as not as risky as a loan that was originated in say, 1988. The difference is due to the differences in property values and the amount of the associated loan. In 1988, many markets were at the peak of the real estate cycle. Since the late 1980s, property values have fallen dramatically and many do not expect property values to decrease further. If property values were to increase or even stay constant, the lender would be more insulated from borrower default than a loan originated in the 1980s.

As mentioned previously, Security Three is fairly unique. Because this security was originally issued in 1993, one year before the studied structure was issued, this loan pool has a default record. Since the Security One and Two are new originations, these loan pools do not have a track record for which the investor could study.

Since Security One and Two contain the same respective borrower, the borrower's reputation and history is essential to evaluate the security. The borrower of Security One is an experienced property owner with several other regional malls under its ownership and/or management. The borrower of Security Two is a venture capitalist that has had several successful financial endeavors. Both borrowers are considered to be prudent risks. The borrowers of Security Three, on the other hand, are numerous. The quality of the borrowers is not discussed in the prospectus. The investor must rely on the historical default rates as discussed in the previous section.

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[37] Ibid., page 29.

If any of the borrowers opt to default, certainly the certificate holders of the lowest rated class will suffer. The CMBS market, unlike the residential market, does not have an insurance mechanism in place to lessen the effects of a default. The investors must rely upon the skills of the servicer to appropriately mange defaulted loans and apply the best remedy possible, in the best interest of the certificate holders. Remedies include loan modification or foreclosure.

4.4 Servicer Advancing

In all three of the Securities, the Servicer is required to make advances to the certificate holders for delinquent or defaulted loans. The Servicer advances this money so that cash flow continuity to the certificate holders is maintained. However, if the Servicer decides that the money is not reimbursable, then the Servicer is not obligated to advance this money. When money is advanced, the certificate holders must repay the Servicer with interest. In each case of the Securities studied, Servicer reimbursement come from the lock box accounts *before* all debt payments and operating expenses.

The risk is that the Servicer will advance money that may not be recoverable. However, the certificate holders must reimburse the Servicer for its advance, but interest payments that the Servicer collects in addition to the reimbursement only serves to heighten the loss to the certificate holders. Therefore, the first loss piece may suffer the most from inappropriate servicer advancing. To the investors in the more senior pieces of the security, servicer advancing is extremely positive. The senior pieces are not as concerned with losses as continuity in cash flow.

Sometimes, the structure names both a servicer and a special (or master) servicer. In that case, the servicer handles the administration of the loan and the special servicer manages defaulted loans. The servicer and special servicer must abide by a binding agreement that is outlined in the issuance. Either the servicer or the master servicer may default against

this agreement, in which case the certificate holders would suffer because the rating of the certificates is partially based on the skill and expertise of the servicer.

If a servicer defaults during the life of the bonds, the certificate holders must hire another servicer. This servicer may be less qualified and may require higher fees; in either situation, the certificate holders are at risk of having the bonds downgraded by the rating agencies and then not achieving their expected yields. While servicer default is difficult to predict, the investors must rely upon the reputation of the named servicer. For all of the securities studied, the Servicers and, for the case of Security Three - the Master Servicer, all have solid reputations which did not affect the rating of the certificates.

Upon borrower default, the servicer should act in the best interests of the certificate holders. However, the interests of all of the certificate holders are not necessarily aligned. The higher rated tranche investors wish to receive their repayment of principal; the lower rated classes wish to avoid losses and keep receiving the servicer's cash flow advances. This translates into the higher rated tranches wanting to foreclose and liquidate as quickly as possible, and the lower rated classes wanting to stall a foreclosure. Because the servicer has flexibility in terms of default remedies, the investors must have confidence that the servicer will act in the best interests of the class that the investor has purchased. This subjective determination may be difficult for all investors to make.

4.5 Additional Debt

Many borrowers extract equity built up either through amortization or appreciation by obtaining a second loan. Second liens on the properties pose potential problems for the senior lenders, namely the certificate holders. None of the securities studied had second, or junior, liens on the property at the time of the issuance. However, two of three securities contain provisions that allow the borrower to obtain secondary loans. Security One provides for $15 million of additional debt and Security Two allows for $80 million of additional debt.

When additional debt is allowed in the security, the amount of the additional loans are specified. Typically, the rating agencies must sanction the transaction by not changing the rating on the certificates. The potential to place additional debt allows the borrowers to maintain the flexibility achieved in the private market. Security One and Two both contain some clauses for flexibility.

In Security One, the borrower may choose to have this additional debt either equal with any single senior component or subordinate to the lien of the Component D mortgage. If the loan is to be equal with the senior component, then the proceeds may only be used to fund property related expenses. However, if the borrower chooses to subordinate the loan to the Component D mortgage, then the proceeds may be used at the borrower's discretion.

Security Two's potential additional debt would be in the form of subordinate, unsecured notes. The loan will potentially be made by a related party of the borrower and then assigned to an unrelated party. No acceleration clauses or remedies will be available to the junior lender until the obligations of the senior loan is paid in full. However, the junior lender may purchase all of the mortgage notes at any time following the acceleration of the notes for a purchase price equal to the amount of all principal and interest then outstanding and unpaid under the mortgage loan documents plus any other costs, fees, charges and expenses, including yield maintenance premiums. If such a purchase is made, then the proceeds will be treated at a prepayment.

In both securities, the additional debt is not mandatory, nor is it definite. Yet, the security holders must be aware of the possibility and understand how the clause could affect their investments.

4.6 Escrow Accounts

An escrow account may take many forms, but usually they are a type of a reserve account that the borrower must maintain according to the security. An escrow account ensures that capital is available for repairs, tenant improvements and other capital outlays. These provisions are important because inevitable capital outlays will not be avoided. Thus, the value of the underlying assets will be preserved which protects the certificate holders. Security One and Two contain provisions for escrow accounts. Security Three does not contain similar clauses.

Security One contains reserve accounts that must be funded each period. The security provides for separate accounts for both capital improvements and tenant improvements. Minimal annual contributions must be made to these accounts to be used when necessary. The reserve account ensure the investor that the necessary funds to replace a major item, such as a roof, are available.

Security Two also contains an escrow account as additional security for the real estate. This account is even more extensive than that of Security One. Security Two's account is far reaching: rental reserves and other items are included. The account is required to maintain an amount equal to the sum of (1) two months' estimated debt service; (2) five percentage of the original aggregate principal amount of the mortgage notes; (3) 1/12 of the aggregate amount of annual budged tenant improvements, capital expenditures and leasing commissions and (4) insurance deductibles. With this amount of reserves, the investors should feel comfortable that unexpected events will not necessarily cause hardship to the certificate holders.

4.7 Information and Reporting

Although the rating agencies monitor the performance of the CMBS once it has been issued, a savvy investor may be able to predict when a security is in trouble before the

rating agencies. If so, then that investor may be able to sell the security and possible avoid untimely losses. In order for an investor to make such a determination, the investor must be well informed about the current status of the collateral that secures the CMBS. Most securities require that the servicer or trustee provide regular reports to its certificate holders. These reports usually contain information about the cash flow distributed to the certificates. However, the information required to analyze the real estate assets may vary dramatically from one security to another.

For example, in Security One, the Servicer will provide the certificate holders with a comprehensive list of data about the property, including net operating income, notice of any known material changes in the real estate and the amounts in the escrow accounts. The specification for real estate information for Security Two is more vague: the Servicer for Security Two will provide, *upon request*, any information relating to the mortgaged properties and the borrower. Security Three, on the other hand, only provides accounting information about the loans.

The level of information will allow the investors to track the performance of the assets. However, the investors must be aware that in some case they need to ask for specific information. For a situation that is like Security Three, the investors may need to rely upon the rating agencies for objective information about the underlying real estate collateral. This lack of information may create a disincentive to trade these securities on the secondary market. Investors must be aware that the level of information provided to the market may impede or enhance the liquidity of this market and, thus, the value of the securities.

CHAPTER 5 - CONCLUSION

This thesis introduces the reader to the CMBS market and argues why a CMBS investment fits into the an insurance company's portfolio. However, the complexity of this market has made some investors wary of participating in the CMBS market, especially in the lower rated, first loss pieces. A wider acceptance of this market has occurred over the last several years because the spread differential has served as an incentive for greater participation.

The intricacies of the CMBS market have allowed many investors to classify commercial mortgage backed securities in a variety of ways; nonetheless, the securities studied represent the typical product based on the number of borrowers and the number of assets. These securities also exemplify CMBS product that appeals to institutional investors.

This thesis categorizes, compares and contrasts risks across three securities. The analysis consisted of a comparison of the real estate and structural components. These two classifications were further broken into the more recognized sub-sections of the assets and the securities.

The three case studies have shown that all of the securities studied are extremely different. Standardization in the market has not occurred, and it is doubtful that standardization in the CMBS market, like that of the residential MBS market, will ever occur. Because commercial real estate assets are non-homogenous, loan underwriting differs based on each asset.

In the past, both real estate lenders and borrowers expected a level of customization to build relationships in the business. Relationships often preceded solid business decisions, as noted during the Savings and Loans debacle. With the advent of securitization, one would believe that the reliance on such relationships is waning. However, borrowers still

expect a level of customization and, depending on the lending environment, lenders may provide that flexibility.

In the CMBS market, the line between borrower, lender and investment banker has somewhat blurred. The borrowers are still demanding the level of customization they previously enjoyed, but now they have the ability to obtain financing either through their traditional lender or investment banker. In a competitive market, lenders will provide customization in order to retain the business. When an loan is securitized the issuer is, therefore, more likely to accept a tailored lending package into a CMBS. Therefore, standard CMBS structures are unlikely to evolve in this market.

The two of the three securities studied display a degree of borrower customization. Of the three securities studied, the most prevalent customization appears within Security One, the single asset - single borrower transaction. Security One differs because this security is more like a direct lending situation. In fact, the Class D piece resembles the equity, or even a participating loan. Although not as prevalent, Security Two also maintains some flexibility for that single borrower. The amount of additional debt the borrower may obtain is testimony to the flexibility that the borrower demanded. Security Three, with its many borrowers, probably had individual borrower customization when the loans were originated. However, these assets were not part of the securitized market when they were originated, so any customization exists in each of the borrower's respective loan documents, not within the security structure.

Notwithstanding, generalizations are difficult to make because the market is constantly changing. The market is new and it has not been fully tested as to which CMBS type is better received by investors. The market is constantly improving on the security structure and information flow. Since the market has only recently experienced rating agency downgrades and upgrades of securities, it is taking these securities and learning from the past successes, mistakes and oversights. As a consequence, the market is constantly

evolving. What today may be a successful structure, may not be as successful in the future.

Despite the lack of standard security structure, the securities studied all have their respective strengths. These strengths are not necessarily in the same area, but where one security falls short, say in the real estate quality, that security more than adequately compensates for the deficiency in another area, say in the structural aspects of the security. Take Security Three for example. This security is lacking in terms of the real estate quality and information about the assets. However, the subordination is about 85% which means that losses incurred would have to erode 85% of the outstanding loan balance of the underlying real estate assets. The probability of this occurring is rather small which is why the security enjoys an investment grade rating from the rating agencies.

Security Two contains a borrower concentration, but the assets are cross collateralized and cross defaulted. Numerous clauses are contained in the structure to overcompensate for this risk, such as the minimum debt service coverage ratios that must be maintained. Security One also contains borrower concentration, but it also contains location concentration and product type concentration. This security overcomes its risk by offering a "clean site" for its security and proving a fair amount of call protection in the security. In summary, a generalization about the relative strength of one security over another cannot be made.

Future studies could explore these differences in a quantitative manner. The relative prices and spreads of each class could be compared across the three different securities. Then the warranted premiums or discounts could be compared to what the market is actually charging.

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