

# MORTGAGE-BACKED SECURITIES (MBS) AND COLLATERALIZED MORTGAGE OBLIGATIONS (CMOS)



**THE**  
**GMS**  
**GROUP**

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## SECURITIZATION: AN OVERVIEW

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*Securitization*\* is the process of creating securities by pooling together various cash-flow producing financial assets. These securities are then sold to investors. Securitization, in its most basic form, is a method of financing assets.

Any asset may be securitized as long as it is cash-flow producing. The terms *asset-backed security (ABS)* and *mortgage-backed security (MBS)* are reflective of the underlying assets in the security.

Securitization provides funding and liquidity for a wide range of consumer and business credit needs. These include securitizations of residential and commercial mortgages, automobile loans, student loans, credit card financing, equipment loans and leases, business trade receivables, and the issuance of asset-backed commercial paper, among others.

Securitization transactions can take a variety of forms, but most share several common characteristics. Securitizations typically rely on cashflows generated by one or more underlying financial assets (such as mortgage loans), which serve as the principal source of payment to investors, rather than on the general credit or claims-paying ability of an operating entity. Securitization allows the entity that originates or holds the assets to fund those assets efficiently, since cashflows generated by the securitized assets can be structured, or “tranching,” in a way that can achieve targeted credit, maturity or other characteristics desired by investors.

\* *Terms that appear in italics are defined in the glossary found at the end of this guide.*

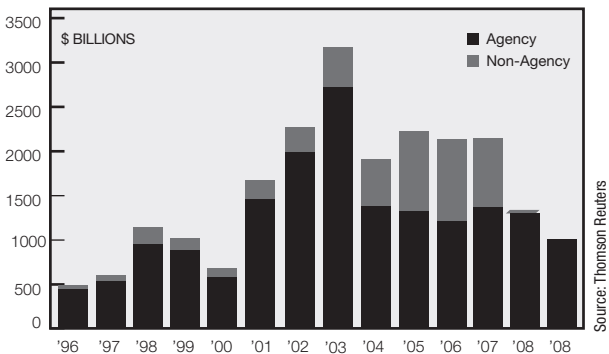
## MORTGAGE SECURITIES: AN OVERVIEW

A mortgage security represents an ownership interest in mortgage loans made by financial institutions to finance the borrower's purchase of a home or other real estate. They are created when these mortgage loans are packaged, or "pooled," by issuers or servicers, and securities are issued for sale to investors. As the underlying mortgage loans are paid off by the borrowers, the investors in the securities receive payments of interest and principal. In this brochure, the generic term "mortgage pass-through securities" will be used to refer to these types of securities, while the term "mortgage securities" will be used to refer to both mortgage pass-through securities and CMOs.

Mortgage securities play a crucial role in the availability and cost of housing in the United States. The ability to securitize mortgage loans enables mortgage lenders and mortgage bankers to access a larger reservoir of capital, to make financing available to home buyers at lower costs and to spread the flow of funds to areas of the country where capital may be scarce.

Before the 1970's, banks were essentially portfolio lenders – they would hold loans made in their

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portfolios until they either matured or were paid off. These loans were financed by bank deposits and occasionally debt obligations of the bank itself. However, after World War II, depository institutions were unable to keep pace with the rising demand for household credit.

Asset securitization began when the first mortgage pass-through security was issued in 1970, with a guarantee by the Government National Mortgage Association (GNMA or Ginnie Mae). The most basic mortgage securities, known as *pass-throughs* or *participation certificates* (PCs), represent a direct ownership interest in a pool of mortgage loans. Shortly after this issuance, both the Federal Home Loan Mortgage Corporation (FHMLC or Freddie Mac) and Federal National Mortgage Association (FNMA or Fannie Mae) began issuing mortgage securities.

Mortgage pass-through securities may be pooled again to create collateral for a more complex type of mortgage security known as *collateralized mortgage obligations* (CMOs). CMOs may also be referred to as a *Real Estate Mortgage Investment Conduit* (REMIC). CMOs and REMICs (terms which are often used interchangeably) are multiclass securities which allow cash flows to be directed so that different classes of securities with different maturities and coupons can be created. They may be collateralized by raw mortgage loans as well as already-securitized pools of loans. The first CMO was issued in 1983. Three years later the Tax Reform Act of 1986 was passed, allowing mortgage securities to be issued in the form of a Real Estate Mortgage Investment Conduit (REMIC), which passes certain tax advantages to both issuers and investors. Since then, most CMOs have been issued in REMIC form.

## THE BUILDING BLOCKS OF MORTGAGE-BACKED SECURITIES

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The creation of a mortgage-backed security begins with a mortgage loan extended by a financial institution to finance a borrower's home or other real estate. The borrower usually repays the mortgage loan in monthly installments composed of both *interest* and *principal*. Characteristics of loans may vary. For instance, some loans allow borrowers to pay just interest for a period of time ('interest only' loans), or allow borrowers to make payments that are lower than the interest due on the loan ('option ARMs'). Over the life of most mortgage loans, the interest component of a payment gradually declines while the principal component increases. Typically, interest comprises the majority of a payment in the early life of the loan.

To obtain funds to make more loans, mortgage lenders pool groups of loans with similar characteristics to create securities or sell the loans to issuers of mortgage securities. As the borrowers whose loans are in the pool make their mortgage loan payments, the money is collected and distributed on a *pro rata* basis to the holders of the securities.

While the creation of mortgage pass-through securities has greatly increased the secondary market for mortgage loans, the structures of these securities have some limitations. Mortgage pass-through securities only appeal to investors with a longer investment horizon.

Collateralized mortgage obligations were developed to offer investors a wider range of investment time frames and greater cash-flow certainty than is available for mortgage pass-through securities. The CMO issuer assembles a package of mortgage pass-through securities or mortgage loans, and uses them as collateral for a multiclass security offering. The different classes of securities in a CMO offer-

ing are known as *tranches*, from the French word for “slice.” The CMO structure enables the issuer to direct the principal and interest cashflow generated by the collateral to the different tranches in a prescribed manner in order to meet different investment objectives.

## **A DIFFERENT SORT OF BOND: PREPAYMENT RATES AND AVERAGE LIVES**

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With fixed-income securities such as corporate or Treasury bonds, the purchase of a bond from an issuer is essentially a loan to the issuer in the amount of the principal, or *face value*, of the bond for a prescribed period of time. In return for this loan, the bondholder receives interest, generally in semiannual payments, until the bond is redeemed. When the bond matures or is called by the issuer, the issuer returns the face value of the bond to the investor in a single principal payment.

Although mortgage securities are fixed-income securities that entitle investors to payments of principal and interest, they differ from corporate and Treasury securities in significant ways. With a mortgage security, the ultimate borrower is the homeowner who takes on a mortgage loan. Because the homeowner’s monthly payments include both interest and principal, the mortgage security investor’s principal is returned over the life of the security, or *amortized*, rather than repaid in a single lump sum at maturity. Mortgage securities provide payments to investors that include varying amounts of both principal and interest. As the principal is repaid, or prepaid, interest payments become smaller because they are based on a lower amount of outstanding principal. In addition, while most bonds pay interest semiannually, mortgage securities may pay interest and principal monthly, quarterly or semiannually, depending on the structure and terms of the issue.

A mortgage security *matures* when the investor receives the final principal payment. Both mortgage pass-through securities and CMO tranches have a stated maturity based on the last date on which the principal from the collateral is scheduled to be paid in full. This date is theoretical because it assumes no prepayments on the underlying mortgage loans. Most mortgage pass-through securities are based on fixed-rate mortgage loans with an original maturity of 30 years, but typically most of these loans will be paid off much earlier.

**Prepayment.** The cashflow on mortgage securities is somewhat irregular because the timing and speed of principal repayments may vary. Typically, a mortgage borrower can *prepay* the mortgage loan by selling the property, refinancing the mortgage, paying off the loan in part or in whole, or defaulting on their loans. When this happens, the investors' remaining interest in the pool is reduced by the prepayment amount. Because the principal is reduced over the life of the security, the interest income also decreases in terms of absolute dollars paid to investors. In the case of CMOs, investors receive these principal repayments according to the payment priorities of the class of securities they own.

*Prepayment assumptions* are estimates of expected prepayments. Industry standard and various proprietary prepayment rate models exist. Their assumptions may be based on historic prepayment rates for each particular type of mortgage loan, various economic conditions and geographical locations of the specific properties, among other factors. These assumptions are factored into the offering price, yield, and market value of a mortgage security. The realization of the *average life* and *yield* estimates depends on the accuracy of the prepayment assumptions. A common way of expressing prepayment rates is in terms of the Standard Prepayment Model of the Securities Industry and Financial Markets Association (SIFMA). Developed in 1985 for mortgage securities, SIFMA's model assumes that new mortgage loans are less likely to be prepaid than

older, “seasoned” mortgage loans. Projected and historical prepayment rates are often expressed as percentage of Prepayment Speed Assumptions (PSA). Other common measures of prepayment speeds include the ‘conditional prepayment rate’ (CPR) and ‘single monthly mortality’ (SMM).

**Average Life.** Average life is the average time that each dollar of principal in the pool is expected to be outstanding, based on certain prepayment assumptions. Because of the ability of borrowers to prepay the underlying mortgage loans, mortgage securities are often discussed in terms of their average life rather than their stated maturity date. If prepayment speeds are faster than expected, the average life of the mortgage security will be shorter than the original estimate; if prepayment speeds are slower, the mortgage security’s average life will be extended. In the case of CMOs, some tranches are specifically designed to minimize the effects of a variable prepayment rate. As is the case of all mortgage securities, the average life of the security is always an estimate at best, contingent on how closely the actual prepayment speeds of the underlying mortgage loans match assumptions.

## **AGENCY VS. PRIVATE LABEL**

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**Agency.** Many mortgage pass-through securities are guaranteed by Ginnie Mae, an agency of the U.S. government, or by U.S. government-sponsored enterprises (GSEs) such as Fannie Mae or Freddie Mac. Ginnie Mae is a government-owned corporation within the Department of Housing and Urban Development. Fannie Mae and Freddie Mac have federal charters and are subject to oversight by the federal government, but are publicly owned by their stockholders<sup>1</sup>. The term *agency* is commonly used to refer to all three institutions. Securities guaranteed

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<sup>1</sup> As of September 7, 2008, Fannie Mae and Freddie Mac are currently under conservatorship of the Federal Housing Finance Agency, and have received financial assistance from the U.S. Treasury. More information is available on the <http://www.treasury.gov> and <http://www.fhfa.gov>.

and/or issued by these entities are known generically as *agency mortgage securities*. Readers should bear in mind that each agency is a separate entity, and the securities issued by Fannie Mae or Freddie Mac differ from those guaranteed by Ginnie Mae.

Fannie Mae and Freddie Mac issue and guarantee pass-through securities. Ginnie Mae adds its guarantee to already-issued private pass-through securities. The mortgage loans in Ginnie Mae guaranteed securities are government-insured by either the Federal Housing Authority (FHA) or Veterans Administration (VA). A guarantee by one of these agencies enhances credit quality for investors as it ensures payment of interest and principal. Loans underlying Fannie Mae and Freddie Mac securities must meet underwriting criteria prescribed by the GSEs (e.g., loan size, documentation, loan-to-value ratios, etc). Mortgages underlying Ginnie Mae pass-throughs are underwritten in accordance with the rules and regulations of the FHA and the VA.

The extent of these security guarantees depends on the agency. Ginnie Mae, for example, guarantees the timely payment of principal and interest on its mortgage securities, and its guarantee is backed by the “full faith and credit” of the U.S. government. Holders of Ginnie Mae mortgage securities are therefore assured of receiving payments promptly each month, regardless of whether the underlying homeowners make their payments. They are also guaranteed to receive the full return of face-value principal even if the underlying borrowers default on their loans. Mortgage securities issued by the VA also carry the same “full faith and credit” U.S. government guarantee.

Fannie Mae generally guarantees timely payment of both principal and interest on its mortgage securities whether or not the payments have been collected from the borrowers. Freddie Mac also generally guarantees timely payment of both principal and interest. Some older series of Freddie Mac PCs guarantee timely payment of interest, but only the

eventual payment of principal. Neither Fannie Mae nor Freddie Mac securities carry the additional “full faith and credit” U.S. government guarantee.

**Private Label.** Some private institutions, such as subsidiaries of investment banks, financial institutions, and home builders, also issue mortgage securities. When issuing mortgage securities, they may issue either agency or non-agency mortgage pass-through securities; however, their underlying collateral will more often include different or specialized types of mortgage loans or mortgage loan pools that do not qualify for agency securities. The transactions may use alternative credit enhancements such as letters of credit. These *non-agency* or so-called *private-label* mortgage securities are the sole obligation of their issuer and are not guaranteed by one of the GSEs or the U.S. Government.<sup>2</sup> Private-label mortgage securities are assigned credit ratings by independent credit agencies based on their structure, issuer, collateral, and any guarantees or other factors.

As an additional investor protection, the mortgage security issuer typically segregates the collateral or deposits it in the care of a designated *trustee*, a party who holds and manages the collateral for the exclusive benefit of the mortgage security bondholders.

## INTEREST RATES AND YIELDS ON MORTGAGE SECURITIES

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**Yield.** Mortgage securities are often priced at a higher yield than Treasury and corporate bonds of comparable maturity, but often lower than the interest rates paid on the underlying mortgage loans. This is because a portion of the interest paid by the mortgage borrower is retained by the loan servicer as a *servicing fee* for collecting payments from borrowers

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<sup>2</sup> To the extent that private-label mortgage securities use agency mortgage pass-through securities as collateral, that specific agency collateral carries the respective agency's guarantees, but the entire mortgage security that is issued does not.

and distributing the monthly payments to investors. Furthermore, Fannie Mae and Freddie Mac collect 'guarantee fees' as compensation for their guarantees on their agency securities. Interest rates on mortgage securities are higher than Treasury and corporate bonds to reflect the compensation for the uncertainty of their average lives as well as their higher credit risk.

As with any bond, the yield on a mortgage security depends on the purchase price in relation to the interest rate and the length of time the investor's principal remains outstanding. Mortgage security yields are often quoted in relation to yields on Treasury securities with maturities closest to the mortgage security's estimated average life. The estimated yield on a mortgage security reflects its estimated average life based on the assumed prepayment rates for the underlying mortgage loans. If actual prepayment rates are faster or slower than anticipated, the investor holding the mortgage security until maturity may realize a different yield. For securities purchased at a discount to face value, faster prepayment rates will increase the yield-to-maturity, while slower prepayment rates will reduce it. For securities purchased at a premium, faster prepayment rates will reduce the yield-to-maturity, while slower rates will increase it. For securities purchased at par, these effects should be lessened.

Because mortgage securities pay monthly or quarterly, as opposed to on a semiannual schedule, mortgage security investors can use their interest income much earlier than other bond investors. Therefore, mortgage securities are often discussed in terms of their *bond equivalent yield*, which is the actual mortgage security yield adjusted to account for its greater present value resulting from more frequent interest payments.

**Interest Rates.** Prevailing market interest rates affect mortgage securities in two major ways. First, as with any bond, when interest rates rise, the market price or value of most types of outstanding mortgage security tranches drops in proportion to the time remaining to the estimated maturity. Conversely, when rates fall,

prices of most outstanding mortgage securities generally rise, creating the opportunity for capital appreciation if the security is sold prior to the time when the principal is fully repaid.

However, movements in market interest rates may have a greater effect on mortgage securities than on other fixed-interest obligations because interest rate movements also affect the underlying mortgage loan prepayment rates and, consequently, the mortgage security's average life and yield. When interest rates decline, homeowners are more likely to refinance their mortgages or purchase new homes to take advantage of the lower cost of financing. Prepayment speeds therefore accelerate in a declining interest rate environment. When rates rise, new loans are less attractive and prepayment speeds slow.

If interest rates fall and prepayment speeds accelerate, mortgage security investors may find they get their principal back sooner than expected and have to reinvest it at lower interest rates (*call risk*). If interest rates rise and prepayment speeds are slower, investors may find their principal committed for a longer period of time, causing them to miss the opportunity to earn a higher rate of interest (*extension risk*). Therefore, investors should carefully consider the effect that sharp moves in interest rates may have on the performance of their mortgage security investment.

## **MORTGAGE SECURITY TYPES**

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**Mortgage Pass-Through Securities.** An issuer of a pass-through or participation certificate (PC) collects monthly payments from the borrowers whose loans are in a given pool and “passes through” the cash flow to investors in monthly payments, less any servicing and/or guarantee fees. Most pass-throughs are backed by fixed-rate mortgage loans; however, *adjustable-rate mortgage loans (ARMs)* are also pooled to create the securities. Most ARMs

have both interest rate floors and caps, setting minimum and maximum interest rates on a loan. These option-like characteristics require that pass-throughs backed by ARMs have higher yields than pure floating-rate debt securities.

**Callable Pass-throughs.** Developed in the 1990s, a callable pass-through is created by splitting a pass-through into two classes: a *callable class* and a *call class*. The callable class receives all of the principal and interest from the underlying collateral. The call class receives no principal or interest. The holder of the call class has a right to call the underlying pass-through at a stated price (usually par plus accrued interest) from the callable class holders after a specified period of time has passed from issuance of the two classes.

The investor holding the callable class has the right to direct the security's trustee to: 1) redeem the outstanding principal amount of the call class at a specified price, and 2) receive the underlying collateral in return.

**CMOs.** The CMO is a multiclass bond backed by a pool of mortgage pass-throughs or mortgage loans. CMOs may be collateralized by both mortgage pass-through securities or mortgage loans, or some combination thereof. In structuring a CMO, an issuer distributes cash flow from the underlying collateral over a series of classes, called *tranches*, which constitute the bond issue. Each CMO is a set of two or more tranches, each having average lives and cash-flow patterns designed to meet specific investment objectives. The average life expectancies of the different tranches in a four-part deal, for example, might be two, five, seven and 20 years.

Cash flows from the CMO collateral may be allocated in a variety of ways. Usually, it is first allocated to meet the interest obligations on all tranches in the offering. Principal repayments, both scheduled and prepaid, are then distributed to the different classes of bondholders according to a predetermined priority schedule which is outlined in the CMO prospectus

or offering circular. The tranche receiving principal repayment is referred to as *active* or *currently paying*. In more complex structures, more than one tranche may receive principal (or be active) at a given time.

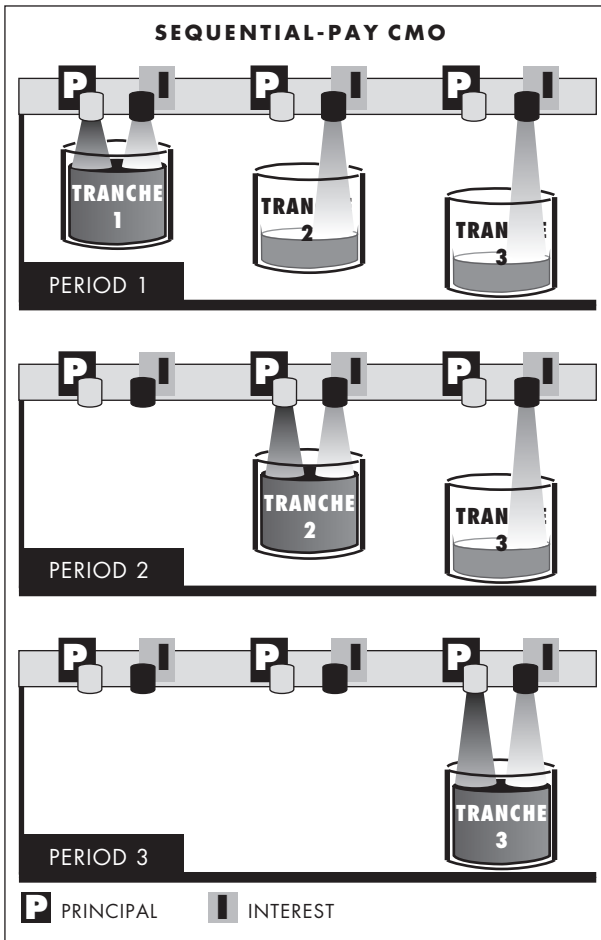
Each CMO tranche has an estimated first payment date on which investors can expect to begin receiving principal payments, and an estimated last principal payment (or *maturity*) date on which they can expect their final dollar of principal to be returned. The period when investors receive interest-only payments before principal payments begin in a give tranche is known as the *lockout* period. The *window* is the period in which principal repayments are expected to occur. Both first and last principal payment dates are estimates based on prepayment assumptions and can vary according to actual prepayments made on the underlying collateral of a CMO.

Investors who purchase CMOs at their *issuance date* may find that their transaction takes up to a month to settle due to the time required to assemble the collateral, deposit it with the trustee, and complete other legal and reporting requirements. In the secondary market, CMO transactions typically settle in three business days.

Because payments to CMO investors depend on the collection and distribution of payments made by the holders of the underlying mortgage collateral, a payment delay occurs when the security is first purchased. *Payment dates* for CMO tranches are defined in the prospectus and are usually stated as the 15th or 25th day of the month following the *record date*. Depending on when the CMO transaction settles, the investor may have to wait up to two months for the first payment; this delay is factored into the yield quoted at the time of purchase. Once the first payment is received, future payments are made monthly or quarterly.

## TYPES OF CMOS

### Sequential Pay



The most basic CMO structure is made up of tranches that pay in a strict sequence. Each tranche receives regular interest payments, but principal payments received are made to the first tranche alone until it is completely retired. Once the first tranche is retired, principal payments are applied to the second tranche until it is fully retired, and the process continues until the last tranche is retired. The first tranche of the offering may have an average life of 2-3 years, the second tranche 5-7 years,

the third tranche 10-12 years, and so forth. This type of CMO is known as a *sequential pay, clean or plain vanilla* offering. The CMO structure allows the issuer to meet different maturity requirements and to distribute the impact of prepayment variability among tranches. This flexibility has led to increasingly varied and complex CMO structures. CMOs may have multiple tranches, each with unique characteristics that may be interdependent with other tranches in the offering. The types of CMO tranches include:

**Planned Amortization Class (PAC) Tranches.**

*Planned Amortization Class (PAC)* tranches use a mechanism similar to a *sinking fund* to establish a fixed principal payment schedule that directs cash-flow irregularities caused by faster- or slower-than-expected prepayments away from the PAC tranche and toward another tranche. With a PAC tranche, the yield, average life, and lockout periods estimated at the time of investment are more likely to remain stable over the life of the security.

PAC payment schedules are protected by priorities which assure that PAC payments are met first out of principal payments from the underlying mortgage loans. Principal payments in excess of the scheduled payments are diverted to non-PAC tranches in the CMO structure called *companion* or *support* tranches because they support the PAC schedules. In other words, at least two bond tranches are active at the same time, a PAC and a companion or support tranche. When prepayments are minimal, payments are made first to the PAC tranche while the companion tranche may have to wait to receive payments. When prepayments are heavy, the PAC tranche pays only the scheduled amount, and the companion class absorbs the excess.

*Type I* PAC tranches maintain their schedules over the widest range of actual prepayment speeds, for example from 100% to 300% PSA. *Type II* and *Type III* PAC tranches can be created with lower priority for principal payments from the underlying collateral than the primary or *Type I* tranches. They

function as support tranches to higher-priority PAC tranches and maintain their schedules under increasingly narrower ranges of prepayments.

PAC tranches are a common type of CMO tranche. Because they offer a higher degree of cash-flow certainty, PAC tranches are usually offered at lower yields.

**Targeted Amortization Class (TAC) Tranches.**

Like PAC tranches, *Targeted Amortization Class (TAC)* tranches also provide more cash-flow certainty and a fixed principal payment schedule.

However, this certainty applies to only one prepayment rate rather than a range. If prepayments are higher or lower than the defined rate, TAC bondholders may receive more or less principal than the scheduled payment. TAC tranches' actual performance depends on their priority in the CMO structure and whether or not PAC tranches are also present. If PACs are also present, the TAC tranche will have less cash-flow certainty. If no PACs are present, the TAC provides the investor with some protection against accelerated prepayment speeds and early return of principal. Yields on TAC bonds are typically higher than yields on PAC tranches, but lower than yields on companion tranches.

**Companion Tranches.** As mentioned, every CMO that has PAC or TAC tranches will also have companion or support tranches to absorb the prepayment variability that has been removed from the PAC and TAC tranches. Once the principal is paid to the active PAC and TAC tranches according to the schedule, the remaining excess or shortfall is reflected in payments to the active companion tranche. The average life of a companion tranche may vary widely, increasing when interest rates rise and decreasing when rates fall. To compensate for this variability, companion tranches offer the potential for higher expected yields when prepayments remain close to the rate assumed at purchase. Similar to Type II and Type III PACs, TAC tranches can serve as companion tranches for PAC tranches. These lower-priority PAC and TAC tranches will in

turn have companion tranches further down in the principal payment priority. Companion tranches are often offered for sale to retail investors who want higher income and are willing to take more risk of having their principal returned sooner or later than expected.

**Z-Tranches.** *Z-tranches*, also known as *accretion bonds* or *accrual bonds*, are structured so that they pay no interest until the lockout period ends and principal payments begin. Instead, a Z-tranche is credited “accrued interest” and the face amount of the bond is increased at the stated coupon rate on each payment date. During the accrual period the principal amount outstanding increases at a compounded rate and the investor does not face the risk of reinvesting at lower rates if market yields decline. Typical Z-tranches are structured as the last tranche in a series of sequential or PAC and companion tranches and have average lives of 18 to 22 years. However, Z-tranches can be structured with intermediate-term average lives as well. After the earlier bonds in the series have been retired, the Z-tranche holders start receiving cash payments that include both principal and interest.

While the presence of a Z-tranche can stabilize the cash flow in other tranches, the market value of Z-tranches can fluctuate widely, and their average lives depend on other aspects of the offering. Because the interest on these securities is taxable when it is credited, even though the investor receives no interest payment, Z-tranches are often suggested as investments for tax-deferred accounts.

**Principal-Only (PO) Securities.** Some mortgage securities are created so that investors receive only principal payments generated by the underlying collateral; the process of separating the interest payments from the principal payments is called *stripping*. These *Principal-Only* (PO) securities may be created directly from mortgage pass-through securities, or they may be tranches in a CMO. In purchasing a PO, investors pay a price deeply discounted from the face value and ultimately receive the entire face value through scheduled payments and prepayments.

The market values of POs are extremely sensitive to prepayment rates. If prepayments accelerate, the value of the PO will increase. On the other hand, if prepayments decelerate, the value of the PO will drop. A companion tranche structured as a PO is called a *Super PO*.

**Interest-Only (IO) Securities.** When creating a PO mortgage security, the resulting stripped interest payments necessitate the creation of *Interest-Only* (IO) securities. IO securities are sold at a deep discount to their *notional* principal amount, namely the principal balance used to calculate the amount of interest due. They have no face or par value. As the notional principal amortizes and prepays, the IO cashflow declines.

Unlike POs, IOs increase in value when interest rates rise and prepayment rates slow; consequently, they are often used to hedge portfolios against interest rate risk. However, IO investors take on the risk that if prepayment rates are high enough, they may actually receive less cash back than they initially invested.

The structure of IOs and POs exaggerates the effect of prepayments on cash flows and market value. The heightened risk associated with these securities makes them unsuitable for certain investors.

**Floating-Rate Tranches.** First offered in 1986, *floating-rate CMO tranches* carry interest rates that are tied in a fixed relationship to an interest rate index, such as the London Interbank Offered Rate (LIBOR), the Constant Maturity Treasury (CMT), or the Cost of Funds Index (COFI). These tranches are subject to an upper and sometimes a lower limit, the *cap* and *floor* respectively. The performance of these investments depends largely on the way interest rate movements affect prepayment rates and average lives.

Sometimes the interest rates on these tranches are stated in terms of a formula based on the designated index, meaning they move up or down by more than one *basis point* for each increase or decrease in the

index. These so-called *super-floaters* offer leverage when rates rise. The interest rates on *inverse floaters* move in a direction opposite to the changes in the designated index and offer leverage to investors who believe rates may move down. The potential for high coupon income in a rally can be rapidly eroded when prepayments speed up in response to falling interest rates. All types of floating-rate tranches may be structured as PAC, TAC, companion, or sequential tranches, and are often used to hedge interest rate risks in portfolios.

**Residuals.** CMOs also contain a *residual* interest tranche, which collects any cash flow remaining from the collateral after the obligations to the other tranches have been met. Residuals are not classified as regular interest and may be structured as sequential, PAC, floating-rate, or inverse-floater tranches, and differ from regular tranches primarily in their tax characteristics, which can be more complex than other CMO tranches. CMOs issued as non-REMICs also have residuals which are sold as a separate security such as a trust certificate or a partnership interest.

**Callable Pass-throughs.** Callable pass-throughs can be used as collateral to back CMOs. Investors should be aware that a call of some or all of the underlying callable pass-throughs may result in a call of all of the outstanding tranches in the CMO they invested in. This can be particularly important to holders of long-term classes.

## TAX CONSIDERATIONS

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*Consult your tax and / or financial advisor for more information on specific tax considerations.*

The interest portion of payments to mortgage securities investors is subject to federal, state, and local income tax. When comparing Treasury yields to mortgage security yields, one should keep in mind

that interest income from Treasury securities is exempt from state and local income tax.

Any portion of the mortgage security payment that represents return of principal or original cost is not taxable. However, if the securities were purchased at a discount from original issue or at a market discount, different rules apply. If an investor buys a mortgage security when originally issued for a price that represents an original discount from its face value, the investor may incur a tax liability on interest which accumulates on the security before it is paid out. If the security is purchased at a discount in the secondary market (*market discount*), the investor may be subject to a tax on the amount of principal received in excess of the purchase price as well as on the interest.

For mortgage securities held in brokerage accounts, the Internal Revenue Service requires the broker-dealer to report the investor's aggregate amount of interest earned and original issue discount accrued during a given calendar year and allows reliance on an external source to supply such tax reporting information. If interest is earned in one calendar year, but not paid until the next, it still must be reported and may be taxable in the year it is earned. Broker-dealers provide clients with copies of reports submitted to the IRS.

As required by federal income tax law, mortgage security issuers must provide information to certain entities in order to properly calculate the taxable income attributable to mortgage securities. Those entities, in turn, are obligated to supply such information to individuals and other "beneficial owners" who are not exempt recipients. Investors should be aware, however, that such information need not be furnished before April 15 of any calendar year following a calendar year in which income accrues on a mortgage securities.

## MINIMUM INVESTMENTS, TRANSACTION COSTS AND LIQUIDITY

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The minimum investment for a mortgage security varies according to the structure of the offering, but most tranches sold to individual investors require a minimum investment of \$1,000. Mortgage security investments are also offered in the form of mutual funds or unit trusts, which typically have similar investment minimums.

A national network of mortgage securities dealers sells, trades, and makes markets in mortgage securities. These transactions are executed over-the-counter (OTC), from counterparty to counterparty, instead of on an exchange.

Mortgage securities are bought and sold between dealers and investors like other debt instruments. Dealers trade the securities at a net cost that includes their own *spread*, or profit, on the transaction. Spreads on mortgage security transactions may be wider than spreads on Treasury security transactions because Treasury securities have a broader and deeper secondary market and are therefore more liquid.

Although there is a secondary market for many types of mortgage securities, the degree of liquidity can vary widely with economic and market conditions. If a mortgage security is sold in the secondary market rather than held until the final principal payment, the security may be worth more or less than its original face value, and may be worth less than the price at which it was purchased.

## IMPORTANT CONSIDERATIONS FOR INVESTING IN MORTGAGE SECURITIES

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Before investing in a mortgage security, a number of factors should be considered with the help of an investment advisor.

Important factors to consider include:

- the existence of a guarantee or other credit enhancement, and the credit quality of the guarantor, if applicable;
- the type of security and type of underlying collateral, which can be found in offering documents such as a prospectus or offering circular;
- the quality of the security and its underlying collateral;
- the level of activity in the secondary market should you need to sell the security before its final principal payment;
- the estimated average life and final maturity, which should match one's investment time frame, also taking into account of a faster or slower prepayment rate;
- the yield compared to other comparable types of investment such as Treasury, corporate and municipal bonds (adjusted for tax considerations); and
- the impact of changes in interest rates to the estimated yield and average life of the security, particularly in the case of specific CMO tranches.

This list is not exhaustive, but instead provides examples of the kinds of questions that should be answered. Considerations of suitability, aligned with your investment objectives, should always be taken into account before making an investment. Contact your financial advisor to discuss possible investments.

## Comparison of Mortgage Pass-Through Securities Characteristics

Security	Guarantee	Minimum Investment	Payment Date
<b>Ginnie Mae I and II</b>	Full and timely payment of principal and interest, backed by the full-faith-and-credit guarantee of the U.S. government	\$1,000 thereafter; \$1 increments (\$25,000 minimum for securities issued before 11/1/2005)	15 <sup>th</sup> or 20 <sup>th</sup> of the month for Ginnie Mae I and II pools, respectively, following the record date and every month thereafter
<b>Ginnie Mae Platinum</b>	Full and timely payment of principal and interest, backed by the full-faith-and-credit guarantee of the U.S. government	\$1,000 thereafter; \$1 increments (\$25,000 minimum for securities issued before 11/1/2005)	15 <sup>th</sup> or 20 <sup>th</sup> of the month for Ginnie Mae I and II pools, respectively, following the record date and every month thereafter
<b>Fannie Mae MBS</b>	Full and timely payment of principal and interest guaranteed by Fannie Mae	\$1,000 minimum; \$1 increments	25 <sup>th</sup> of the month following the record date and every month thereafter
<b>Freddie Mac (75-day PC)</b>	Full and timely payment of interest and ultimate payment of principal guaranteed by Freddie Mac	\$1,000 minimum; \$1 increments	15 <sup>th</sup> of the second month following the record date and every month thereafter
<b>Freddie Mac Gold PC</b>	Full and timely payment of interest and scheduled principal guaranteed by Freddie Mac	\$1,000 minimum; \$1 increments	15 <sup>th</sup> of the month following the record date and every month thereafter

## Comparison of CMO/REMIC Mortgage Securities Characteristics

Security	Guarantee	Minimum Investment	Payment Date
<b>Ginnie Mae REMIC</b>	Full and timely payment of principal and interest, backed by the full-faith-and-credit guarantee of the U.S. government	\$1,000 minimum; \$1 increments	16 <sup>th</sup> or the 20 <sup>th</sup> of the month for Ginnie Mae I and II collateral, respectively, following the record date and every month thereafter
<b>Freddie Mac REMIC</b>	Full and timely payment of interest and scheduled principal guaranteed by Freddie Mac	\$1; \$1 increments (most dealers, however, require a minimum investment of \$1,000 or more)	15 <sup>th</sup> of the month following the record date and every month thereafter
<b>Fannie Mae REMIC</b>	Full and timely payment of interest and scheduled principal guaranteed by Fannie Mae (collateral of Fannie Mae "G" series is also backed by the full faith and credit of the U.S. government)	\$1,000 minimum; \$1 increments	18 <sup>th</sup> or the 25 <sup>th</sup> of the month following the record date and every month thereafter
<b>Agency-backed, private-label CMO/REMIC</b>	Collateral guaranteed by Ginnie Mae, Fannie Mae, or Freddie Mac. Structure can provide basis for high rating, but these securities carry no explicit government guarantee; they are the sole obligation of their issuer	Varies	Varies; may be monthly, quarterly or semiannually; with or without payment delay
<b>Whole-loan backed, private-label CMO/REMIC</b>	Credit support provided by some combination of issuer or third-party guarantee, letter of credit, overcollateralization, pool insurance, and/or subordination.	Varies	Varies; may be monthly, quarterly or semiannually; with or without payment delay

## GLOSSARY

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**Accretion bond:** See *Z-tranche*.

**Accrual bond:** See *Z-tranche*.

**Accrued interest:** Interest deemed to be earned on a security but not yet paid to the investor.

**Active tranche:** A CMO tranche that is currently paying principal payments to investors.

**Amortization:** Liquidation of a debt through installment payments.

**Average life:** On a mortgage security, the average time to receipt of each dollar of principal, weighted by the amount of each principal prepayment, based on prepayment assumptions.

**Basis point:** One one-hundredth (.01) of a percentage point. Yield changes and differences among bonds are stated in basis points.

**Beneficial owner:** One who benefits from owning a security, even if the security's title of ownership is in the name of a broker or bank.

**Bid price:** The price at which a buyer offers to purchase a security.

**Bond equivalent yield:** An adjustment to a CMO yield which reflects its greater present value, created because CMOs pay monthly or quarterly interest, unlike most types of bonds, which pay interest semiannually.

**Book-entry:** A method of recording and transferring ownership of securities electronically, thereby eliminating the need for physical certificates.

**Call risk:** For a CMO, the risk that declining interest rates may accelerate mortgage loan prepayment speeds, causing an investor's principal to be returned sooner than expected. As a consequence, investors may have to reinvest their principal at a lower rate of interest.

**Cap:** The maximum interest rate that may be paid on a floating-rate security.

**Clean CMO:** See *Sequential-pay CMO*.

**CMO (Collateralized Mortgage Obligation):** A multiclass bond backed by a pool of mortgage pass-through securities or mortgage loans. See *REMIC*.

**CMT (Constant Maturity Treasury):** A series of indexes of various maturities (one, three, five, seven, or ten years) published by the Federal Reserve Board and based on the average yield of a range of Treasury securities adjusted to a constant maturity corresponding to that of the index.

**COFI (Cost of Funds Index):** A bank index reflecting the weighted average interest rate paid by savings institutions on their sources of funds. There are national and regional COFI indexes.

**Collateral:** Securities or property pledged by a borrower to secure payment of a loan. If the borrower fails to repay the loan, the lender may take ownership of the collateral. Collateral for CMOs consists primarily of mortgage pass-through securities or mortgage loans, but may also encompass letters of credit, insurance policies, or other credit enhancements.

**Companion tranche:** A CMO tranche that absorbs a higher level of the impact of collateral prepayment variability in order to stabilize the principal payment schedule for a PAC or TAC tranche in the same offering.

**Confirmation:** A document used by securities dealers and banks to state in writing the terms and execution of a verbal arrangement to buy or sell a security.

**Conventional mortgage loan:** A mortgage loan that is based solely on real estate as security, is not insured or guaranteed by a government agency, and is eligible for purchase or insurance by Fannie Mae or Freddie Mac.

**CPR (Constant Prepayment Rate):** The percentage of outstanding mortgage loan principal that prepays in one year, based on an annualized Single Monthly Mortality (SMM), which reflects the outstanding mortgage loan principal that prepays in one month.

**Credit rating agency:** A company that analyzes the credit worthiness of a company or security, and indicates that credit quality by means of a grade, or credit rating.

**Current face:** The current remaining monthly principal on a mortgage security. Current face is computed by multiplying the original face value of the security by the current principal balance factor.

**CUSIP:** CUSIP numbers are unique nine-character alphanumeric identifiers assigned to each series of securities. The Committee on Uniform Security Identification Procedures was established by the American Bankers Association to develop a uniform method of identifying securities.

**Extension risk:** For a CMO, the risk that rising interest rates may slow the anticipated prepayment speeds, causing investors to find their principal committed longer than they expected. As a consequence, they may miss the opportunity to earn a higher rate of interest on their money.

**Face:** The principal amount of a security that appears on the face of the instrument. With mortgage securities, the amount of debt outstanding on the underlying mortgage loans.

**Factor:** A decimal value reflecting the proportion of the outstanding principal balance of a mortgage security, which changes over time, in relation to its original principal value.

**Floating-rate CMO:** A CMO tranche which pays an adjustable rate of interest tied to a representative interest rate index such as the London Interbank Offered Rate (LIBOR), the Constant Maturity Treasury (CMT), or the Cost of Funds Index (COFI).

**Floor:** The lower limit for the interest rate on a floating-rate security.

**Hedge:** A commitment or investment made with the intention of minimizing the impact of adverse price movements in an asset or liability, offsetting potential losses.

**Inverse floater:** A CMO tranche that pays an adjustable rate of interest that moves in the opposite direction from movements in a representative interest rate index such as the London Interbank Offered Rate (LIBOR), the Constant Maturity Treasury (CMT), or the Cost of Funds Index (COFI).

**IO (interest-only) security:** A security or tranche that pays only interest and not principal. IO securities are priced at a deep discount to the “notional” amount of principal used to calculate the amount of interest due.

**Issue date:** The date on which a security is deemed to be issued or originated.

**Issuer:** The entity obligated to pay principal and interest on a bond it issues.

**Jump Z-tranche:** A Z-tranche that may start receiving principal payments before prior tranches are retired if market forces create a “triggering” event, such as a drop in Treasury yields to a defined level, or a prepayment experience that differs from assumptions by a specific margin. “Sticky” jump Z-tranches maintain their changed payment priority until they are retired. “Non-sticky” jump Z-tranches maintain their priority only temporarily for as long as the triggering event is present. Although jump Z-tranches are no longer issued, some still trade in the secondary market.

**LIBOR (London Interbank Offered Rate):** The rate banks charge each other for short-term eurodollar loans. LIBOR is frequently used as the base for resetting rates on floating-rate securities.

**Lockout:** The period of time before a CMO investor will begin receiving principal payments.

**Maturity date:** The date when the principal amount of a security is due to be repaid, or the end of the life of a security.

**Mortgage:** A legal instrument that creates a lien upon real estate securing the payment of a specific debt.

**Mortgage loan:** A loan secured by a mortgage.

**Mortgage pass-through security:** A debt instrument representing a direct interest in a pool of mortgage loans. The pass-through issuer or servicer collects payments on the loans in the pool and “passes through” the principal and interest to the security holders on a *pro rata* basis. Mortgage pass-through securities are also known as mortgage-backed securities (MBS) and participation certificates (PC).

**Negative convexity:** A characteristic of CMOs and other callable or prepayable securities that causes investors to have their principal returned sooner than expected in a declining interest rate environment, and later than expected in a rising interest rate environment.

**Offer:** The price at which a seller will sell a security.

**Original face:** The face value or original principal amount of a security on its issue date.

**PAC (planned amortization class) tranche:** A CMO tranche that uses a mechanism similar to a sinking fund to determine a fixed principal payment schedule that will apply over a range of prepayment assumptions. The effect of the prepayment variability that is removed from a PAC bond is transferred to a companion tranche.

**Par:** The principal amount of a bond due at maturity. With mortgage securities, the amount of debt outstanding on the underlying mortgage loans.

**Payment date:** The date that principal and interest payments are paid to the record owner of a security.

**P&I (principal and interest):** The term used to refer to regularly scheduled payments or prepayments of principal and of interest on mortgage securities.

**Plain-vanilla CMO:** See *Sequential-pay CMO*.

**PO (principal-only) security:** A tranche or security that pays investors principal only and not interest. PO securities are priced at a deep discount from their face value.

**Pool:** A collection of mortgage loans assembled by an originator or master servicer as the basis for a security. In the case of Ginnie Mae, Fannie Mae, or Freddie Mac mortgage pass-through securities, pools are identified by a number assigned by the issuing agency.

**Prepayment:** The unscheduled partial or complete payment of the principal amount outstanding on a mortgage loan or other debt before it is due.

**Price:** The dollar amount to be paid for a security, which may also be stated as a percentage of its face value or par in the case of debt securities.

**Principal:** The face amount of a bond, payable at maturity. With mortgage securities, the amount of debt outstanding on the underlying mortgage loans.

**Private label:** The term used to describe a mortgage security whose issuer is an entity other than a U.S. government agency or U.S. government-sponsored enterprise. Such issuers may be banks, subsidiaries of investment banks, other financial institutions, or home builders, for example.

**Pro rata:** Proportional distribution to all holders of the same class, based on ownership.

**Ratings:** Designations used by credit rating agencies to give relative indications as to opinions of credit quality.

**Record date:** The date for determining the owner entitled to the next scheduled payment of principal or interest on a mortgage security.

**REMIC (Real Estate Mortgage Investment Conduit):** A pass-through investment vehicle which issues multiclass mortgage-backed securities that have certain tax and accounting advantages for issuers and investors due to the Tax Reform Act of 1986. Currently, most CMOs are issued in REMIC form and the terms “REMIC” and “CMO” are now used interchangeably.

**Residual:** A tranche which collects any cash flow from the collateral that remains after obligations to all the other tranches have been met.

**Scenario analysis:** An analysis examining the likely performance of an investment under a wide range of possible interest rate environments.

**Sequential-pay CMO:** The most basic type of CMO. All tranches receive regular interest payments, but principal payments are directed initially only to the first tranche until it is completely retired. Once the first tranche is retired, the principal payments are applied to the second tranche until it is fully retired, and so on. *Also known as a ‘plain vanilla’ or ‘clean’ CMO.*

**Servicing:** The collection and pooling of principal, interest, and escrow payments on mortgage loans and mortgage pools; accounting; bookkeeping; insurance; tax records; loan payment follow-up; delinquency loan follow-up; and loan analysis. The party providing these services receives a fee, the *servicing fee*, as compensation.

**Servicing fee:** The amount retained by the mortgage servicer from monthly interest payments made on a mortgage loan.

**Settlement date:** The date for the delivery of bonds and payment of funds agreed to in a transaction.

**Sinking fund:** Money set aside by an issuer of bonds on a regular basis, for the specific purpose of redeeming debt. Bonds with such a feature are known as “sinking fund.”

**SMM (Single Monthly Mortality):** The percentage of outstanding mortgage loan principal that prepays in one month.

### **Standard Prepayment Model**

**(SIFMA prepayment model):** A model based on historical mortgage prepayment rates used to estimate prepayment rates on mortgage securities. SIFMA’s model is based on the Constant Prepayment Rate (CPR), which annualizes the Single Monthly Mortality (SMM), or the

amount of outstanding principal that is prepaid in a month. Projected and historical prepayment rates are often expressed as “percentage of PSA” (Prepayment Speed Assumptions). A prepayment rate of 100% PSA implies annualized prepayment rates of 0.2% CPR in the first month, 0.4% CPR in the second month, 0.6% CPR in the third month, and 0.2% increases in every month thereafter until the thirtieth month, when the rate reaches 6%. From the thirtieth month until the mortgage loan reaches maturity, 100% PSA equals 6% CPR.

**Super PO:** A principal-only security structured as a companion bond.

**Superfloater:** A floating-rate CMO tranche whose rate is based on a formulaic relationship to a representative interest rate index.

**Support tranche:** See *Companion tranche*.

**TAC tranche:** Targeted amortization class tranche. A TAC tranche uses a mechanism similar to a sinking fund to determine a fixed principal payment schedule based on an assumed prepayment rate. The effect of prepayment variability that is removed from the TAC tranche is transferred to a companion tranche.

**Toggle tranche:** See *Jump Z-tranche*.

**Tranche:** A class of bonds in a CMO offering. “Tranche” is the French word for “slice.”

**Transfer agent:** A party appointed to maintain records of securities owners, to cancel and issue certificates, and to address issues arising from lost, destroyed, or stolen certificates.

**Trustee:** An entity designated by the issuer as the custodian of funds and official representative of bondholders. Trustees are appointed to ensure compliance with the trust indenture and represent bondholders to enforce their contract with the issuers.

**Weighted average coupon (WAC):** The weighted average interest rate of the underlying mortgage loans or pools that serve as collateral for a security, weighted by the size of the principal loan balances.

**Weighted average loan age (WALA):** The weighted average number of months since the date of the origination of the mortgages (i.e., the age of the loans) that collateralize a security, weighted by the size of the principal loan balances.

**Weighted average maturity (WAM):** The weighted average number of months to the final payment of each loan backing a mortgage security weighted by the size of the principal loan balances. Also known as weighted average remaining maturity (WARM) and weighted average remaining term (WART).

**Window:** In a CMO security, the period of time between the expected first payment of principal and the expected last payment of principal.

**Yield:** The annual percentage rate of return earned on a security, as computed in accordance with standard industry practices. Yield is a function of a security’s purchase price and interest rate.

**Z-tranche:** Often the last tranche in a CMO, the Z-tranche receives no cash payments for an extended period of time until the previous tranches are retired. While the other tranches are outstanding, the Z-tranche receives credit for periodic interest payments that increase its face value but are not paid out. When the other tranches are retired, the Z-tranche begins to receive cash payments that include both principal and continuing interest.



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212.313.1200

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