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GNMA Project Loans and Residential Collateralized Mortgage Obligations

GNMA (Ginnie Mae) residential and multi-family (project loan) CMOs represent an intriguing subset of securities within the broader U.S. mortgage market. Foremost, unlike mortgage-backed securities issued by FNMA (Fannie Mae) and FHLMC (Freddie Mac), GNMA securities carry the full faith and credit of the U.S. government. Not only are principal and interest payments guaranteed, so is their timeliness. GNMA collateral and securities also exhibit characteristics different from those of FNMA and FHLMC securities, and are therefore also valuable as a diversification tool.

The table below illustrates where GNMA securities fit in the broader government securities universe. This paper aims to familiarize the reader with some of the distinctive dynamics of GNMA securities: collateral, structure, performance characteristics and risk factors. The first section focuses on residential mortgages (GNMA CMOs), while the second section details multi-family mortgages (GNMA Project Loans).

Overview

GNMA

GNMA was created in 1968 as part of the Department of Housing and Urban

Development's Office of Housing. Its mandate is to help provide affordable housing to low- and moderate-income buyers, which it fulfills by acting as an intermediary between capital markets and issuers of Federal Housing Administration (FHA) and Veterans Administration (VA) mortgages. To increase investor interest and reduce costs to borrowers, GNMA:

- packages loans into pass-through securities (similar to FNMA and FHLMC).
- guarantees the full and timely payment of interest and principal with the full faith and credit of the U.S. government (unlike FNMA and FHLMC).

The Big Picture: GNMA and the Government Securities Universe

Sector	Type	Outstandings (\$ Billions)	Maturity Type	Mat/WAL at New Issue (Years)	Bid/Ask Spreads (bps)	Nominal Spreads to Treasury (bps)	OAS to Treasury (bps)
U.S. Treasuries	Various	7,215	Bullet	1 to 30	<1	—	—
Bills	Bills	1,690	Bullet	0 to 1	<1	—	—
Notes	Notes	4,230	Bullet	1 to 10	<1	—	—
Bonds	Notes	731	Bullet	30	<1	—	—
TIPS	Notes	564	Bullet	1 to 30	3	—	—
U.S. GSEs*	Notes	1,402	Bullet	1 to 10	2	10 to 80	10 to 80
TLGP	Notes	333	Bullet	1 to 3.5	7	10 to 25	10 to 25
Agency Pass-through MBS	Securitized	5,577	30-yr. window	2 to 8	5	125 to 200	20 to 40
FNMA & FHLMC*	Securitized	4,842	30-yr. window	2 to 8	5	125 to 200	20 to 40
GNMA	Securitized	735	30-yr. window	2 to 8	5	125 to 200	20 to 40
Agency CMOs	Securitized	1,258	Multiyear	1.5 to 30	5	80 to 150	10 to 40
FNMA & FHLMC*	Securitized	1,021	Multiyear	1.5 to 30	5	80 to 150	10 to 40
GNMA MBS	Securitized	204	Multiyear	1.5 to 30	5	60 to 100	10 to 40
GNMA Project Loans	Securitized	32	Multiyear	1.5 to 30	10	80 to 120	0 to 50
Small Business Administration	Securitized	24	Multiyear	—	—	—	—

*FNMA and FHLMC are owned, but their debt is not guaranteed, by the U.S. government.

Source: Securities Industry and Financial Markets Association, Bank of America, JP Morgan, Bloomberg, BNY Mellon Cash Investment Strategies

Collateral

Most of the collateral behind GNMA securitized assets consists of individual loans pooled together in either Pass-Through or Collateralized Mortgage Obligations (CMOs). GNMA brought the first Mortgage Pass-Through security to market in 1970.

Since 1994, GNMA has also been issuing CMOs backed by FHA multifamily loans; these are known as GNMA Project Loans.

Pass-throughs and CMOs

A pass-through security directs the cash flows generated by the underlying collateral pool to investors without modifying them. Since underlying loans have maturities of 15 to 40 years, these pass-through securities exhibit long maturities. The long-term nature of the securities leaves many investors unable or unwilling to participate because of their limitations on investment horizons or volatility.

In order to appeal to a broader base of investors, GNMA issues REMICs (Real Estate Mortgage Investment Conduits) from which several securities (CMOs) are issued. The cash flows generated by the underlying pool of collateral are redirected unevenly to various investors in the pool. Possibilities for creating CMO tranches are endless: Interest Only (IO), Principal Only (PO), sequential (one tranche receives all principal before others), PAC (Planned Amortization Class) to reduce prepayment uncertainty and PAC support tranches to increase exposure to prepayment volatility. One should keep in mind, however, that while uncertainty of payments can be reduced by investing in CMOs, it cannot be eliminated. It should be noted that

while spreads are typically attractive compared to equivalent agency debentures, CMO tranches structured for more predictability will trade at lower spreads than more volatile tranches.

GNMA Residential Mortgage CMOs: A Closer Look

Collateral Characteristics

GNMA serves the mortgage financing needs of low- to moderate-income homebuyers by securitizing FHA- and VA-approved loans with low down payments and lower maximum loan amounts than FNMA/FHLMC loans. While traditionally FHA mortgages were issued to qualifying borrowers for new mortgage and FHA refinances, FHA has recently loosened some of the qualifying criteria (maximum LTV and Loan Amount in particular) to offer “upside-down” borrowers an alternative to foreclosure due to the difficulty of refinancing in a down housing market.

Here are a few of the main differences between GNMA and FNMA/FHLMC mortgages:

- GNMA loans carry the full faith and credit of the U.S. government.
- GNMA borrowers typically have lower FICO scores.
- GNMA loans usually carry higher Loan-To-Value (LTV) ratios.
- Loan amounts on GNMA mortgages are typically lower.
- GNMA mortgages are assumable (transferable).
- GNMA borrowers pay a fee of approximately 0.50% annually in addition to their mortgage rate.

More information about qualifying criteria for FHA mortgages is available at:

<http://www.nls.gov/offices/adm/hudclips/handbooks/hsggh/4155.1/41551hbHSGH.pdf>

Prepayment and Prepayment Modeling

Borrowers typically prepay for one of the following reasons:

- The borrower is refinancing at a lower rate.
- The homeowner is moving.
- Curtailments: partial paydown of principal.
- Cash-out refinancing.

Overall prepayments will be affected by a variety of factors, either specific to the mortgage terms (interest rate, LTV), the borrower (age, income, FICO score), the underlying property (location, type, price), as well as macroeconomic factors: level of interest rates, home prices, credit and job markets.

In the case of guaranteed mortgages, a borrower default will have the same effect as a prepayment from the investor’s perspective.

Prepayments are measured in annualized prepaid principal as a percentage of the remaining balance known as CPR (Conditional Prepayment Rate). As an example, 15% CPR over a one-year period means that 15% of the pool has prepaid (compounding monthly) during the past 12 months.

Prepayment Standard Assumption (PSA) is a common measure of prepayments. 100% PSA assigns a monthly CPR depending on the age of the underlying mortgage pool. It assumes that there are no prepayments in the first month.

Prepayments ramp up at a rate of 0.2% per month until they reach a maximum speed of 6% CPR on month 30 and remain stable thereafter.

Structure

Collateralized Mortgage Obligations (CMOs) have highly customizable structures, but most agency mortgage CMOs follow a typical template to redirect cash flows to various investors depending on their maturity preference and risk tolerance.

Since credit risk is not a concern, CMO tranches are classified by their claims to pool collateral cash flows with respect to two dimensions: principal and interest. To the right are some of the most typical descriptions.

Principal

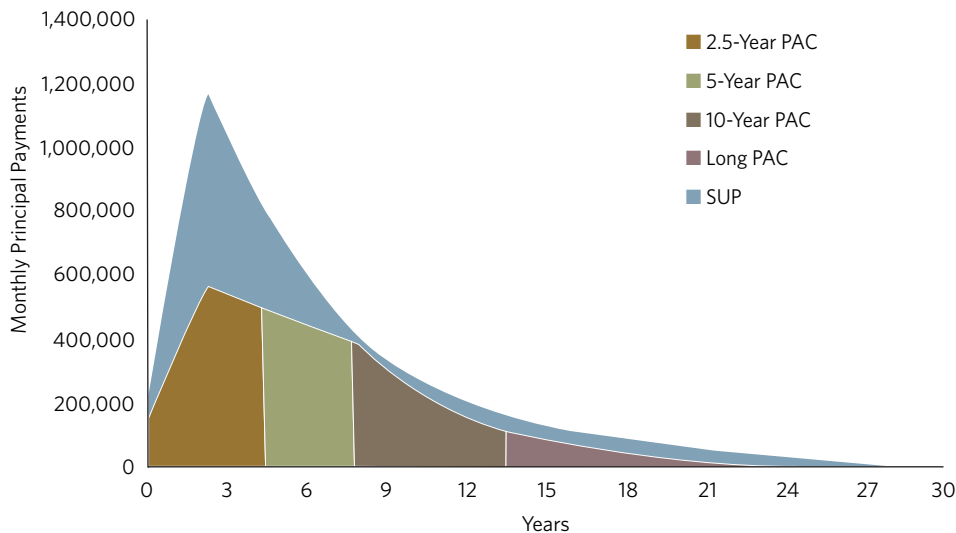
PT	Pass-Through
SEQ	Sequential
PAC	Planned Amortization Class
PAC II	Planned Amortization Class
TAC	Targeted Amortization Class
SUP	Support or Companion
Z	Accrual Bond
AD	Accretion Directed
VADM	Very Accurately Determined Maturity
NAS	Non-Accelerated Security
NASQ	NASquential
SSEQ	Super Stable/Sinking Fund
PO	Principal Only

Interest

FLT	Floater
IO	Interest Only
INV	Principal Inverse Floater
INV IO	Inverse Floater, Interest Only

The shortest weighted average life (WAL) and least uncertainty of cash flows will typically be provided by a first sequential PAC. A PAC tranche will provide partial protection against faster or slower prepayments around a range known as a "Band." For example, a CMO can offer known principal payments for a range of 100 to 300 PSA, as can be seen in the example below.

Projected Monthly Principal Payments for GNMA CMO Tranches



Source: J.P. Morgan Securities, Inc.

Class	Lower Band	Upper Band
PAC STRIP	100	300
2.5-Year PAC	100	363
5-Year PAC	100	300
10-Year PAC	100	300
Long PAC	76	300

Liquidity Considerations

While not as liquid as pass-through securities, GNMA CMOs are extremely liquid, especially where there is little uncertainty (short WAL PACs).

GNMA Project Loans: A Closer Look

Underlying Collateral

GNMA's mandate as it relates to multifamily housing is to foster the growth of the nation's multifamily, senior and health care housing supply,

condos, co-ops, nursing homes, assisted-living facilities, healthcare centers and hospitals.

Current outstandings are over \$60 billion, with the market roughly split evenly in two sources of origination:

- Multifamily housing
- Health care

The underlying loans are fully amortizing, level-pay, and have 35- to 40-year maturities. Penalties are in place to discourage the borrower from

quickly refinancing: there is a 10-year call protection period, including a two- to five-year hard lockup, followed by eight to five years of decreasing penalties for early prepayment of the loan.

Structure

GNMA typically bundles FHA Project Loans in pools of approximately 50 loans of about \$5 million each, for a total pool value of \$250 million at new issue. We show the pool details of a typical deal below.

GNMA Remic Trust 2008-039 Deal and Collateral Summary

Intex Name	GNM08039	Master Servicer	Ginnie Mae	Original Deal Balance	\$265,510,677	Current Net WAC	5.8523
Deal Type	Commercial MBS	Settle Date	Aug. 30, 2009	Current Deal Balance	\$257,027,061	Current WAM	370.00
Collateral Type	Agency Multifamily	Latest Update	Sept. 16, 2009	Original Collateral Balance	\$265,560,678	1-Month CPR	0.07
Issuer	Ginnie Mae Remic Trust	Deal Closing Date	May 29, 2008	Current Collateral Balance	\$256,796,280	3-Month CPR	0.07
Trustee	Wells Fargo Bank	First Pay Date	June 16, 2008	Current Number of Assets	73		
Business Center(s)	NYC	Next Pay Date	Sept. 16, 2009	Current Factor	0.9670		
Dealer	Banc of America Securities/Loop Capital	Deal Age	16	Current WAC	6.1486		

Source: Intex

Call Protection	Assets	Current Balance (1,000s)	Current Balance (%)
Lockout or Defeasance	8	12,209	4.75
Lockout or Defeasance then Penalty	31	111,954	43.60
Points 9%	20	66,664	25.96
Points 8%	8	49,558	19.30
Points 3%	1	5,897	2.30

Source: Intex

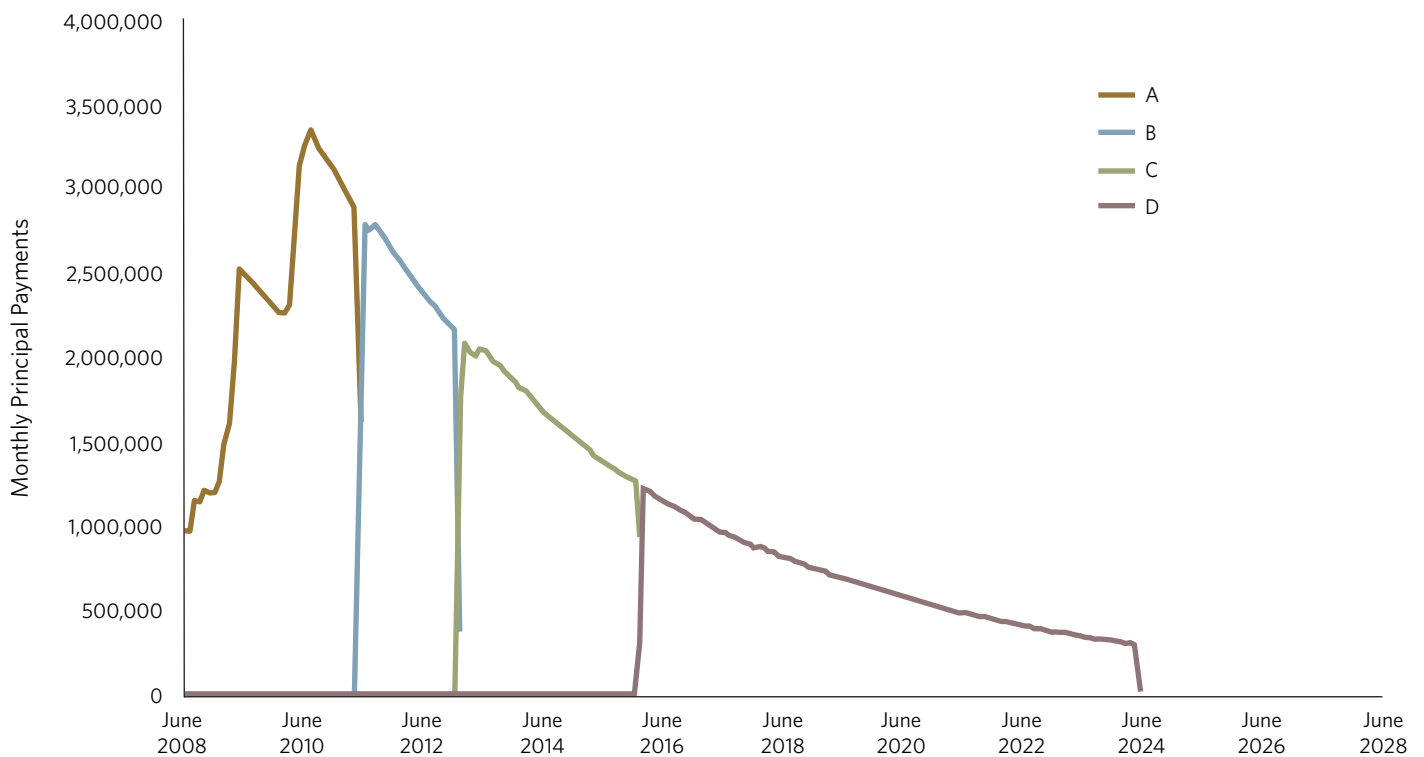
GNMA structures the deal to fit the needs of multiple investor types. Tranches A, B, C and D pay sequentially:

Tranche Summary Information for GNMA REMIC Trust 2008-039

Tranche	CUSIP	Type	Coupon	Original Moody's/ S&P/Fitch	Original Supply (%)	Current Supply (%)	Original Balance (1,000s)	Current Balance (1,000s)	Factor	Estimated WAL at New Issue	Stated Maturity
A	38373MW22	SEN_AD_FIX	4.5000	Aaa/NA/NA	100.00	100.00	\$82,180	\$73,273	0.8916	1.75	Feb. 16, 2023
B	38373MW30	SEN_AD_FIX	4.5490	Aaa/NA/NA	100.00	100.00	\$49,000	\$49,000	1.0000	3.75	June 16, 2028
C	38373MW48	SEN_AD_FIX_CAP	5.0230	Aaa/NA/NA	100.00	100.00	\$61,000	\$61,000	1.0000	5.99	Mar. 16, 2034
D	38373MW55	SEN_AD_FIX_CAP	5.5320	Aaa/NA/NA	100.00	100.00	\$66,000	\$66,000	1.0000	10.87	Aug. 16, 2040
Z	38373MW63	SEN_Z_FIX	4.5000	Aaa/NA/NA	100.00	100.00	\$7,330	\$7,754	1.0578	20.27	Feb. 16, 2048
IO	38373MW71	SEN_WAC_IO	0.9539	Aaa/NA/NA			\$265,511	\$257,027	0.9680	6.20	Feb. 16, 2048
RR	38373MW89	NPR_NPR_NO	0.000				\$0	\$0	0.0000		

Source: Intex

Projected Monthly Principal Payments for GNMA REMIC Trust 2008-039



Source: Intex, BNY Mellon Cash Investment Strategies

Prepayment Assumptions

Extensive research was performed in the late 1990's to characterize the prepayment behavior of borrowers. It was found that GNMA project loan borrowers typically prepay at a constant 15% annualized rate when the hard lockout period expires. Some adjustments are also required to account for the expected increase and then burn out in defaults and liquidations, both of which look like a principal prepayment from the investor's perspective. The end result is a standard set of prepayment speeds referred to as CPJ, commonly set at 15 by market participants.

Liquidity Considerations

At above \$60 billion in outstandings, GNMA Project Loans constitute an active market but is smaller than the \$200 billion GNMA Residential MBS CMO market.

Risk Factors

Weighted Average Life (WAL) vs. Principal Payment Window

The WAL of a security is the time-weighted average of projected principal payments. As such, a security with a WAL of 1.75 years (Tranche A in our example) is not expected to pay off until May 2011, almost three years after the security was issued (June 2008).

Expected vs. Actual Prepayment Speeds

Prepayment assumptions are used widely for structuring and trading purposes (especially for Project Loans). However, the realized prepayment may look significantly different (changes in interest rates, defaults, lumpiness...) and may have a significant impact on

realized WAL/Principal Window and realized total return.

In the current low yield environment, most secondary GNMA CMOs and Project Loans trade at a premium to reflect the value of a coupon higher than prevailing interest rates. For example, GNR 2008-39 A has a 4.5% coupon and an expected WAL of 1.1 year at 15CPJ. Its market price of \$102.5 reflects a spread over Treasuries of 155 bps for an overall expected yield of 2.04%, attractive compared to a one-year Bill yielding 0.35%. If the actual prepayments come faster than expected ("prepayment risk"), say at 30CPJ instead of 15CPJ, the realized spread to Treasuries falls to 37 bps. Conversely, a slowdown in prepayments ("extension risk") would provide a longer WAL but a realized annualized return of 2.85%.

Impact of Spreads on Total Return

The spread over Treasuries reflects market interest for a sector. As risk appetites shift over time, spreads exhibit volatility. While there is no impact on

total return if the security is held to maturity, spreads will impact market prices and realized total return if the security is sold before maturity. Below is an example of changes in market prices for GNR 2008-39 A for a tightening/widening of 100 bps in spreads.

Reinvestment Risk

Mortgage pools exhibit negative convexity, meaning that investors are more likely to receive their principal at the most inopportune time. If rates are low, borrowers will tend to refinance and investors will have to reinvest the proceeds at lower rates. Conversely, if interest rates increase, borrowers will be content to make the minimum payment and investors won't be able to take advantage of higher rates.

This risk is mitigated at the structural level in residential CMOs (PACs) and at the loan level in Project Loans (10-year call protection) but can still be significant.

Impact of Prepayments on GNMA REMIC Trust 2008-039 at 15CPJ

Given: Price	102-16 Yield	WAL	Spread @ Center	Principal Window
15 CPJ	2.0419	1.11	155	Sept. 09 to Sept. 11
7.5 CPJ	2.8528	1.67	208	Sept. 09 to Dec. 12
30 CPJ	0.6669	0.70	37	Sept. 09 to Nov. 10

Source: Intex, BNY Mellon Cash Investment Strategies

Impact of Market Spreads on Price of GNMA REMIC Trust 2008-039 at 15CPJ

Spread	55	155	255	WAL	Yield @ Center	Principal Window
Price	103.6082	102.4982	101.4085	1.11	2.0435	Sept. 09 to Sept. 11

Source: Intex, BNY Mellon Cash Investment Strategies

Conclusion

GNMA residential and project loan CMOs represent an attractive asset class for short-duration investors. GNMA securities are unique in the U.S. mortgage-backed market owing to the full faith and credit guarantee provided by the U.S. government. As a

result, GNMA securities carry minimal credit risk, while their historically low prepayment rates result in more predictable cash flows. Despite these advantages GNMA CMOs are an often overlooked segment of the market, resulting in attractive relative value opportunities for investors.

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