Investment Insights

UBS Asset Management

For professional / qualified / institutional clients and investors only | Q3 2018

For all the regulatory changes prompted by the 2008/9 financial crisis, few markets have undergone a greater transformation than securitized mortgages. Yet despite its strong long-term risk-adjusted returns history, and positive past performance in rising rate environments, US agency-Mortgage Backed Securities (agency-MBS) remain overlooked by many institutional investors outside of the US. This month's *Investment Insights* serves as a primer to the history, performance characteristics, benefits and risks of the second largest bond market in the world.

US agency-MBS: Overlooked despite counter-cyclical qualities

Erin Browne, Dan Heron

Highlights

- In our view, residential mortgage-backed securities sponsored and backed by the US government (agency-MBS) offer a strong alternative to corporate bonds
- US agency-MBS has delivered superior risk-adjusted returns to US Treasuries, US investment grade corporate bonds and US high yield over the past 10-, 15- and 20- year periods
- US agency-MBS has also historically delivered superior risk adjusted-returns
  - during periods of rising interest rates
  - when US house prices have fallen on an annualized basis
  - when US equities have fallen more than 10% on an annualized basis
- Yield premium to Treasuries mainly reflects cash flow uncertainty prompted by prepayment risk mainly due to housing turnover and refinancing
- We believe that a maturing but well supported US economy and gradual tightening of US rates are likely to reduce prepayment risk of refinancing without materially threatening higher prepayments due to other causes
- Prepayment modelling complexity and a diverse universe of over 500,000 securities may provide significant ongoing opportunities to add value via active management
- Liquidity attractions too: Q2 average daily trading volume figures for US mortgage-related securities USD 226.3bn v USD 32.5bn for US corporate bonds[1]

We have highlighted in a number of recent publications our belief that the investment environment over the next few years is likely to be very different to the one that has prevailed for most of the post-financial crisis era.

A backdrop of heightened geopolitical risk, higher policy rates and bond yields plus a well-supported but nonetheless maturing bull market for equities is likely to mean lower returns and higher volatility across traditional asset classes. We believe that investors will have to think differently and perhaps embrace a broader universe of asset classes in order to generate attractive risk-adjusted returns going forward.

This month's *Investment Insights* looks at the key characteristics of US agency—Mortgage Backed Securities (agency-MBS) and asks whether this overlooked asset class has much to offer institutional investors.

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[1] Source: SIFMA, July 2018

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A brief history of Mortgage Backed Securities

Debt secured by mortgage payments is hardly new to global capital markets. German pfandbriefe and Danish mortgage bonds have been around for over two centuries. But while there is evidence of a developed market in mortgage securitization in the US dating back to the 1920s, the modern era of securitized mortgage payments began in 1970.

Fast forward to the present day and US securitized assets are a USD 10.8 trillion market that lags only Treasuries (USD 14.9 trn) in terms of market size.[2] The overwhelming majority of these securitized assets are mortgages.

In simple terms securitization is the process of pooling similar contractual cash flows into tradeable debt securities.

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Securitization Timeline

1938
US government creates Federal National Mortgage Association (FNMA—Fannie Mae) to buy mortgages from banks to free up capital for the wider economy

1968
Fair Housing Act splits Fannie Mae and creates Government National Mortgage Association (GNMA—Ginnie Mae)

1970
US government creates Federal Home Loan Mortgage Corporate (FHLMC—or Freddie Mac) as competitor to Fannie Mae

Ginnie Mae guarantees first mortgage backed security (MBS)

1971
Freddie Mac introduces first conventional MBS

1977
First private-label RMBS

1983
Further innovation in MBS market sees new Collateralised Mortgage Obligation structure launched, separating MBS cash flows into different 'tranches' to allow investors to further differentiate risk and return profile

1985
1985 First non-mortgage securitization when computer lease receivables of Sperrey Corporation are parcelled up and sold on in first asset backed security

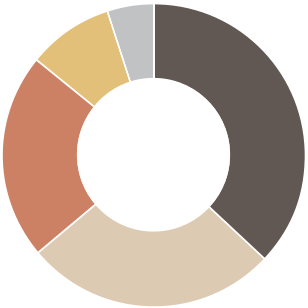
First securitization of auto loans

1987
First securitization of credit card payments

2008
Fannie Mae and Freddie Mac placed under conservatorship of Federal Housing Finance Association

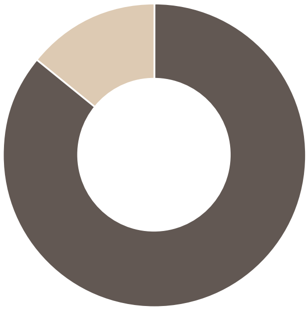
[2] SIFMA, as at March 31 2018

Exhibit 1: US Fixed Income Outstanding Issuance (USD bn)



Source: SIFMA, as at March 31, 2018

Exhibit 2: US Securitzed Assets by Type (USD bn)



Source: SIFMA, as at March 31, 2018

With a traditional mortgage loan in the US repayable monthly over a 30-year period with a fixed rate, it is hardly surprising that such bond-like characteristics are so well suited to the concept of securitization.

MBS issued by Fannie Mae, Freddie Mac and Ginnie Mae are collectively known as agency-MBS.

The most important differences between the agencies are that Ginnie Mae is a government corporation guaranteeing the interest and principal payments on federally-insured loan programs. As such Ginnie Mae enjoys the explicit guarantee of the full faith and credit of the sovereign US government. MBS issued by Ginnie Mae are therefore treated the same as Treasuries from a risk-weighted capital perspective by regulators.

Fannie Mae and Freddie Mac are privately structured entities with shareholder capital created to acquire so-called conventional (non-government backed) mortgages. Given their importance to the overall US financial system and their position as government sponsored enterprises (as opposed to government backed) Fannie Mae and Freddie Mac have operated under an implicit rather than an explicit government guarantee.

On September 8, 2008, a week before the demise of Lehman Brothers, investors' belief in that implicit guarantee proved well founded. Fannie Mae and Freddie Mac were bailed out by the US government and returned to public oversight to ensure that the US housing market continued functioning as private-label mortgage rates spiked amid well founded concerns about Fannie Mae and Freddie Mac's solvency. Fannie Mae and Freddie Mac now operate under the watchful eye of the Federal Housing Finance Association. Under the terms of their 'conservatorship', both agencies enjoy favourable funding rates supported by the US Treasury's financing arrangements—with the Treasury providing capital as needed. The long-term debt of both Fannie Mae and Freddie Mac is rated AAA/Aaa by the major ratings agencies. To reflect their marginally higher risk profile, MBS issued by Fannie Mae and Freddie Mac are 20% risk weighted by regulators and tend to trade with a small yield premium to comparable Ginnie Mae issues.

In theory, the conservatorship status of Fannie Mae and Freddie Mac obligates the US government to return both companies to shareholder control at some point. But the key role both organizations play in the US housing market and the sheer scale of MBS issued under the implicit guarantee of federal government makes this unlikely, at least in the short-term.

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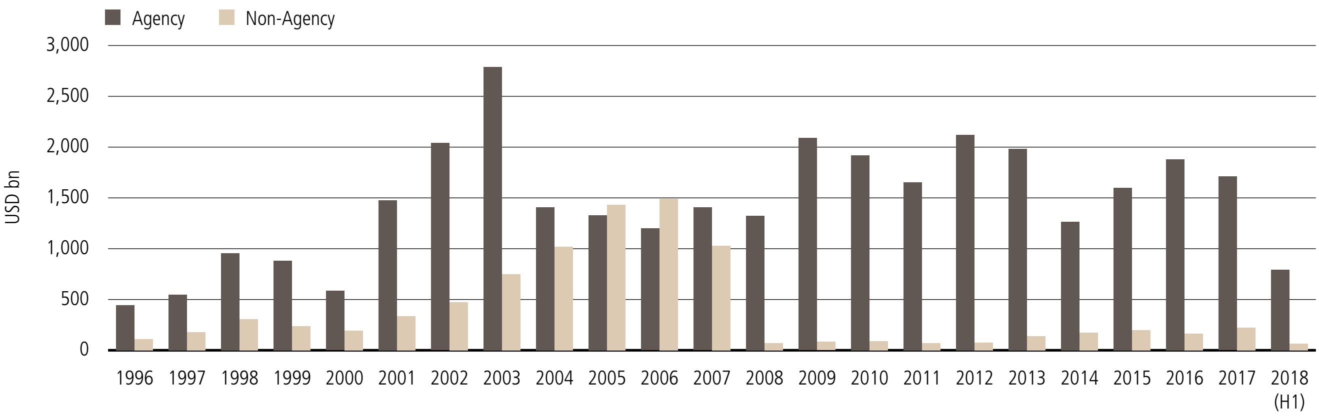
Exhibit 3: US Mortgage-Related Securities Issuance (USD bn)



Source: SIFMA, as at June 30 2018

While the backing of the government prevented widespread losses in agency-MBS, buyers of private-label RMBS were not so fortunate. In 2006, private-label RMBS issuance was greater than its agency counterpart. Since then, private-label RMBS market volumes have stagnated while agency-MBS have continued to flourish.

More than anything, the low levels of activity in private-label RMBS reflect continued investor distrust over mortgage origination practices by private companies. Clearly, agency-MBS issuers operate at a competitive advantage on a number of levels with explicit and implicit government backing, preferential regulatory treatment and lower funding costs. To counter these higher costs the underlying mortgages would have to be at a significantly higher rate than agency-MBS in order to make non-agency RMBS worthwhile. At the present time the economics rarely stack up.

Within the agency mortgage pools there have been some significant changes too. Higher fees for the guarantee the Government Sponsored Enterprises (GSEs) provide and higher mortgage insurance premiums have raised the overall cost of borrowing. Loan-Level Pricing Adjustments (LLPAs) (fees based on the risk of the loan based on a borrower's credit score and loan to value and other criteria) have also been introduced as a first attempt at more accurate risk pricing. LLPAs have also increased the cost of a conventional loan for borrowers with lower credit scores.

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Agency-MBS performance

Historic performance of agency-MBS has been strong across multiple time periods. Over the 20-year period to June 30, 2018, annualized returns for agency-MBS were marginally ahead of those for US Treasuries—but critically were achieved with lower volatility. On a risk-adjusted basis, agency-MBS has outperformed US Treasuries, US investment grade corporate bonds and US high yield over 10-, 15- and 20- year time periods. During the financial crisis, while non-agency RMBS and other forms of structured credit suffered sharp falls, the backing of the US government helped to ensure that agency-MBS not merely only outperformed other fixed income sub-classes but posted positive returns.

Perhaps most importantly of all given the current macroeconomic backdrop, our analysis shows that agency-MBS has also performed strongly during periods of both rising US policy rates and when US house prices have fallen on an annualized basis. Interestingly, in both environments, agency-MBS returns were higher and volatility lower than over the full 20-year period, underscoring the potential diversification and counter cyclical benefits of agency-MBS in multi asset portfolios.

For those unfamiliar with agency-MBS, the most obvious question is why the asset class continues to offer a yield premium when long-term risk-adjusted returns performance is so strong.

In the main, this premium reflects the risk of mortgage prepayment, its potentially significant impact on expected returns, the weighted average life and the duration of any MBS—and the inherent complexity in modelling and forecasting prepayment.

The critical point to remember is that agency-MBS are effectively callable bonds. In the US, mortgage holders can generally repay their mortgage at any time without penalty. For buyers of MBS, this clearly creates some complexities and risks. The sensitivities of any MBS portfolio to changes in interest rates can and do change over time, sometimes significantly, as mortgage prepayments accelerate or slow as interest rates and the broader economic backdrop evolves.

US Fixed Income over 20yrs to end-June 2018

	ICE BAML US Treasury Index (%)	ICE BAML US HY Index (%)	ICE BAML US 30yr MBS Index (%)	ICE BAML US Corporate Index (%)
Ann Return	4.4	6.6	4.8	5.4
Ann Vol	4.4	8.7	2.7	5.2
Ann Ret/Ann Vol	0.99	0.76	1.78	1.05
Sharpe Ratio	0.57	0.55	1.08	0.68
MAX rolling 12m returns	14.8	63.2	14.1	30.8
MIN rolling 12m returns	-3.7	-30.7	-2.6	-14.3

US Fixed Income during rising rate environments 1998-2018

	ICE BAML US Treasury Index (%)	ICE BAML US HY Index (%)	ICE BAML US 30yr MBS Index (%)	ICE BAML US Corporate Index (%)
Ann Return	4.1	4.4	5.5	4.6
Ann Vol	3.2	4.6	2.7	3.6
Ann Ret/Ann Vol	1.26	0.97	2.07	1.28
Sharpe Ratio	0.97	0.76	1.71	1.02

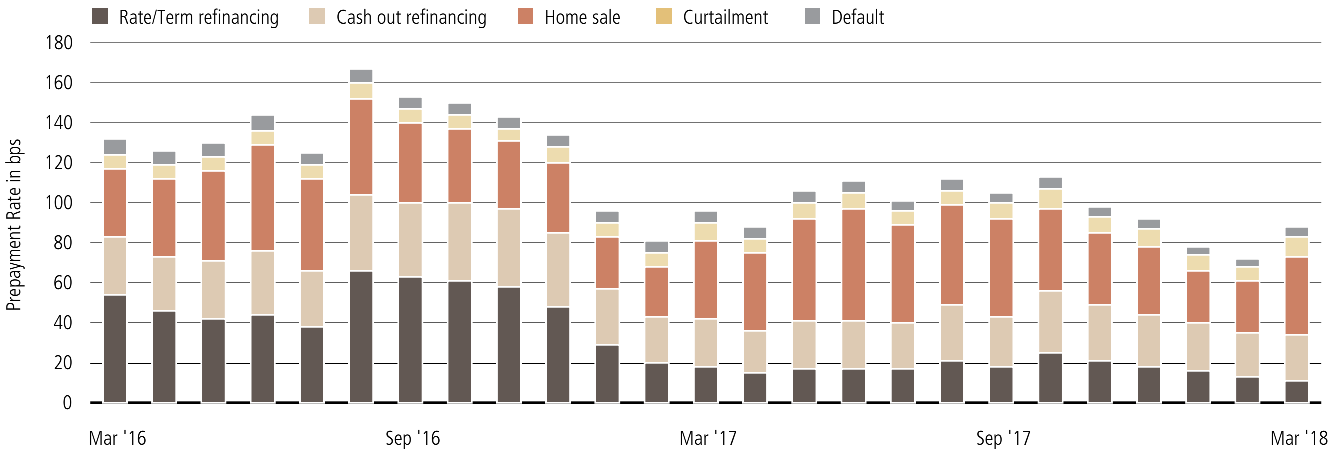
Source: Datastream, UBS Asset Management. Data as at June 30th 2018. Using monthly data, rising rate environments are defined as period from month-end prior to first hike to last month-end in cycle prior to cut

US Fixed Income during rolling 12m periods of falling house prices 1998-2018

	ICE BAML US Treasury Index (%)	ICE BAML US HY Constrained (%)	ICE BAML US 30yr MBS (%)	ICE BAML US Corporate Index (%)
Avg Annual Return	6.6	9.9	6.8	7.2
Volatility	3.1	20.2	1.6	9.2
Return/Vol	2.10	0.49	4.16	0.78
MAX Rolling 12m Return	14.0	63.2	12.0	30.8
MIN Rolling 12m Return	-3.7	-30.7	4.1	-14.3

Source: Source: Datastream, UBS Asset Management. Data as at June 30th 2018, monthly data

Exhibit 4: US agency-MBS Prepay Activity in bps—Most Recent 24m



Source: Black Knight Monthly Monitor, May 2018

There are a number of reasons why a mortgage might be prepaid:

- rate and term refinancing (i.e. market rates are significantly lower than original mortgage rate.)
- to monetise some of their equity—so-called 'cash out' refinancing
- turnover—mostly due to moving. Aggregate turnover activity tends to be driven by home price appreciation. As home prices rise, homeowners tend to buy and sell homes more quickly, driving up prepay speeds. There is also a high degree of seasonality to US housing turnover with the majority of transactions occurring between March and June.
- early payment of part of the loan—called curtailment
- delinquency—In conventional agency-MBS, loans that are more than 90-days delinquent can be bought out by the GSE.

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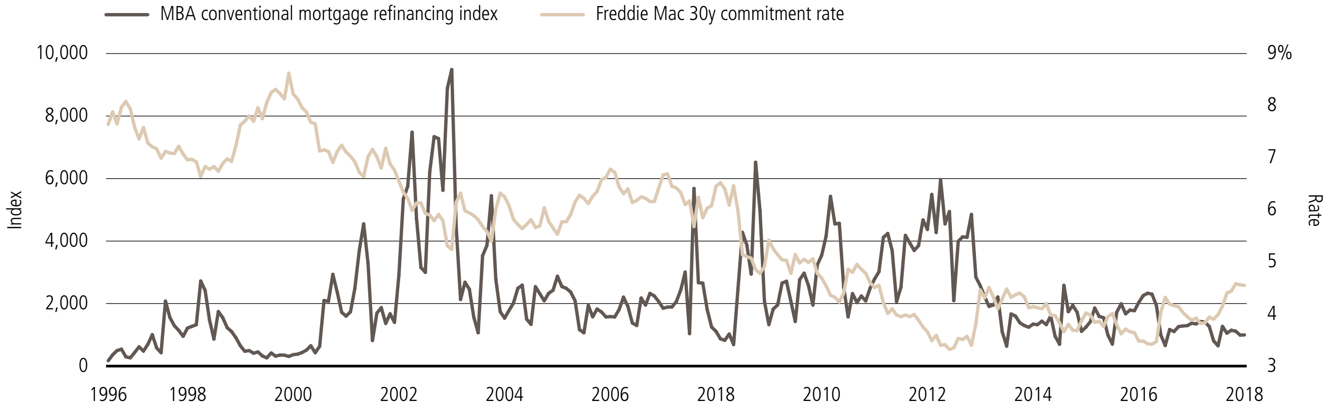
The risk to MBS investors of prepayment is one of cash flow uncertainty and the unknown of where prevailing market rates will be relative to the coupon when mortgages are prepaid. If an MBS is paying an above-market yield and a large proportion of loans are prepaid, there is clearly reinvestment risk relative to the original high coupon. Conversely, if an MBS is paying a below-market yield and loans are prepaid, that capital can be reinvested at a higher rate and boost the overall value of the security.

This means that the rate of change in the MBS duration tends to accelerate sharply at very low and very high interest rates—with duration falling as mortgages are prepaid at low levels of interest rates and rising relative to original expectations as rates rise as prepayments dry up. In the language of bond investors this is negative convexity.

The rate at which the principal is expected to be prepaid is referred to as the Constant Prepayment Rate (CPR), and is usually expressed as a percentage of the pool of mortgages. Each issue of MBS comes with assumptions about the CPR. Realized returns are highly dependent on realized prepayments relative to CPR assumptions.

Exhibit 5: Mortgage Refinancing and Mortgage rates have been inversely correlated historically: MBA Conventional Mortgage Refinancing Index (LHS) v Freddie Mac 30yr Commitment Rate (%, RHS)



Source: Datastream, UBS Asset Management as at June 30, 2018

The current outlook

With a maturing US economy and rising rates we see current prepayment risk as low. Data from the recent Black Knight Mortgage Monitor shows refinancing activity at a four year low and only one basis point (bp) from the lowest level ever recorded in September 2008. With house price strength likely to slow but not collapse, the risk from turnover is similarly reduced. Tighter lending standards and a reduction in speculative real estate transactions means that turnover is unlikely to return to pre-crisis levels.

Key to the performance of agency-MBS will be communication from the Federal Reserve and the volatility of interest rate expectations. To-date, the tightening of the Federal Funds rate has been gradual and well flagged. It is therefore our view that the maturing US economy and the gradual tightening of US rates are likely to reduce prepayment risk of refinancing without materially threatening a counter balancing increase in prepayments due to delinquency. This is based on our view that US wage growth will continue to accelerate and that the peak in interest rates in this cycle is likely to be significantly lower than in previous cycles. Affordability ratios look far from stretched and the overall tightening in lending standards should at least provide a more meaningful buffer against delinquency than in the last US recession. According to Black Knight Mortgage Monitor (April 2018) "affordability is still better than long-term averages across much of the country".

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Active opportunity

While the prepayment behavior of mortgage holders is difficult to predict and beholden to the collective decision making of thousands of individual borrowers, in many ways this is also one of the attractions of agency-MBS. Despite its overall scale, agency-MBS is not an efficient market. Modelling prepayment risk is part art, part science—and there are over 500,000 individual agency-MBS securities outstanding.

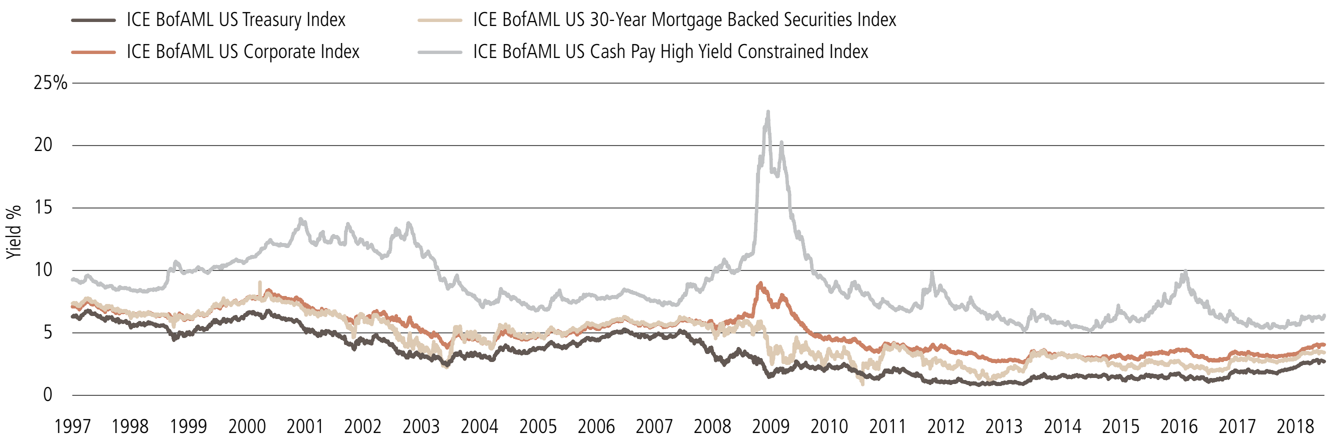
Additionally, agency-MBS is an inter-dealer, not an exchange traded market—making efficient price discovery more difficult. All of this provides a large, opportunity-rich universe for skilled active managers to add value where any one of a whole host of individual risk characteristics may be mispriced.

With some counter-cyclical features, a strong performance history with low volatility, the backing of the US government and plenty of opportunity for skilled active managers to add value, we believe that US agency-MBS should be on the radar of many institutional investors seeking to improve their risk-adjusted return profile.

MBS and QE

As part of its Quantitative Easing (QE) program the US Federal Reserve bought nearly 27% of the outstanding issuance of agency mortgage backed securities. The Fed currently owns around USD 1.7trn. As part of its policy normalization process, the Fed has now begun reducing its holding in agency-MBS at a rate of USD 4bn a month—a rate that will eventually rise to USD 20bn per month. Critical to minimizing market disruption has been the Fed's commitment to a well flagged and gradual approach that does not involve the direct selling of any securities. The Fed is simply not reinvesting the proceeds from maturing securities. Average daily volume in mortgage-related securities was USD 226bn in Q2 2018 according to industry body SIFMA, suggesting that the QE reversal is unlikely to have a significant disruptive impact on agency-RMBS markets. It is worth noting that average daily volume in agency-MBS is 7x that of US corporate bonds.

Exhibit 6: US Fixed Income: Yield by asset type 1997-2018



Source: Bloomberg, UBS Asset Management as at June 30, 2018

Further reading

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