MILLIMAN WHITE PAPER

Milliman Mortgage Default Index: 2020 Q3

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The Milliman Mortgage Default Index (MMDI) is a lifetime default rate estimate calculated at the loan level for a portfolio of single-family mortgages. For the purposes of this index, default is defined as a loan that becomes 180 days delinquent or worse.[1] The results of the MMDI reflect the most recent data acquisition available from Freddie Mac, Fannie Mae, and Ginnie Mae, with measurement dates starting from January 1, 2014.

COVID-19 effects on mortgage risk

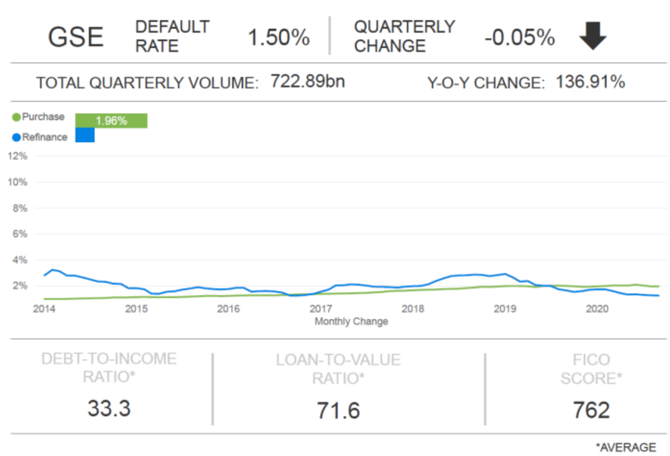
Significant uncertainty continues regarding how mortgage performance may be affected by the COVID-19 pandemic and its associated economic impacts. While unemployment rates, delinquency rates, and the percentage of loans in forbearance have increased rapidly since the start of the pandemic, the housing market has remained surprisingly resilient. Please refer to prior releases of the MMDI,[2] as well as recent Milliman articles on the topic,[3] for more detailed discussions of the potential impact of the pandemic on mortgage performance.

Key findings

Mortgage demand remained strong during the third quarter (Q3) of 2020, with Freddie Mac and Fannie Mae mortgage volume increasing more than 125% year-over-year and hitting record volume. Concurrent with the increased mortgage volume, the default risk of mortgages continued to decline year-over-year and quarter-over-quarter as interest rates also declined and home prices continued to grow.

When reviewing the total default risk quarter-over-quarter, particularly components related to the borrower risk (i.e., the credit profile of borrowers) and underwriting risk (i.e., specific loan and property features that increase or decrease default risk), the MMDI for government-sponsored enterprise (GSE) acquisitions—loans acquired by Freddie Mac and Fannie Mae—decreased from 1.54% for loans originating in 2020 Q2 to 1.50% for loans originating in 2020 Q3. Figure 1 provides the quarter-end index results for these loans segmented by purchase and refinance.

FIGURE 1: MMDI 2020 Q3 DASHBOARD FOR GSE LOANS



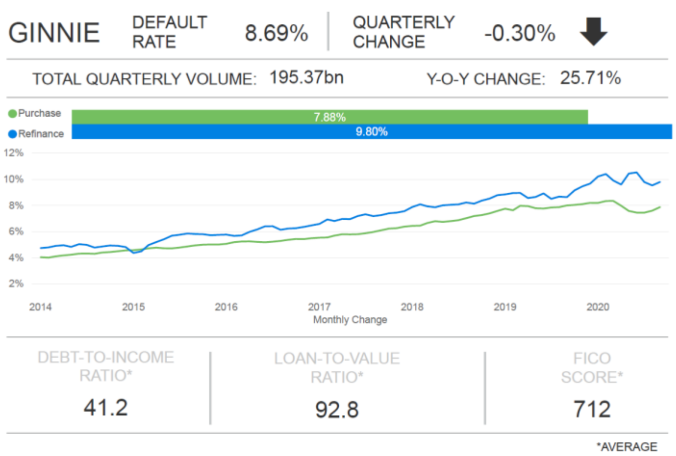
The MMDI for Ginnie Mae loans decreased from 8.99% in 2020 Q2 to 8.69% in 2020 Q3, as can be seen in Figure 2 on page 2 (segmented by purchase and refinance). For certain types of refinance loans (i.e., streamline refinance loans), Ginnie Mae acquisitions do not receive an updated credit score. For the MMDI, a credit score of 600 is conservatively used to calculate the default risk on mortgages with a missing credit score. Because a large portion of volume was refinance volume, many Ginnie Mae loans are getting assigned a low credit score of 600.

[1] For example, if the MMDI is 10%, then we expect 10% of the mortgages originated in that month to have become 180 days delinquent or worse over their lifetimes.

[2] The MMDI report on 2019 Q2, for example, is available at https://us.milliman.com/en/insight/mortgage-default-index-2019-q2.

[3] See https://us.milliman.com/en/risk/mortgage.

FIGURE 2: MMDI 2020 Q2 DASHBOARD FOR GINNIE LOANS



When reviewing quarter-over-quarter changes in the MMDI, it is important to note that the 2020 Q2 MMDI values for GSE and Ginnie Mae acquisitions have been restated since the last publication, changing from 1.74% to 1.54% and 10.61% to 8.99%, respectively. This is a result of updating actual home price movements from forecasted values and updating home price appreciation forecasts with the most recent forecasts available. Since the start of the pandemic-induced shutdowns (March 2020), actual home price appreciation has exceeded expectations, resulting in consecutively lower restated values of the MMDI.

Agency summary

When comparing the most recent Freddie and Fannie acquisitions to the prior quarter, default risk continued to decrease, driven by lower borrower and underwriting risk profiles. For the most recent quarter, approximately 75% of the mortgage volume was refinance loans. Refinance loans have lower loan-to-value (LTV) ratios and lower risk relative to purchase loans, thus the lower value of the MMDI. This combined with home price growth resulted in a decline in the MMDI from 1.54% to 1.50%. Anecdotally, refinance demand is so high that mortgage originators cannot keep pace with the demand. As it is easier and more efficient to underwrite low-risk loans relative to high-risk loans, it is possible one driver of the historically low levels of borrower and underwriting risk is a function of positive selection by mortgage originators.

Loans guaranteed by Ginnie Mae experienced a slight decrease in their default risk in 2020 Q3. Of the Ginnie Mae loans originated during this quarter, approximately 50% were refinance loans. Many refinance loans were originated through streamlined refinance programs where a credit score is not provided. These loans are conservatively assigned a credit score of 600 in the index, which increases borrower default risk during heavy refinance periods for Federal Housing Administration (FHA) and Veterans Affairs mortgages. We note that the MMDI for purchase loans decreased for 2020 Q3 originations relative to 2020 Q2 originations. For the most recent quarter, the MMDI value for borrower risk, measured by FICO score, LTV, and debt-to-income (DTI) ratio, was 5.92%; this compares to a value of 6.75% as of 2019 Q1 (the first publication of the MMDI). It indicates a stronger borrower risk profile for more recent purchase of FHA loans relative to 2019 originations.

Components of default risk

The components of the MMDI that inform default risk are borrower risk, underwriting risk, and economic risk. Borrower risk measures the risk of the loan defaulting due to borrower credit quality, initial equity position, and debt-to-income ratio. Underwriting risk measures the risk of the loan defaulting due to mortgage product features such as amortization type, occupancy status, and other factors. Economic risk measures the risk of the loan defaulting due to historical and forecasted economic conditions.

BORROWER RISK RESULTS: 2020 Q3

For GSE loans, borrower risk decreased in 2020 Q3 relative to 2020 Q2 from an average of 1.12% to 1.07%. For perspective, average borrower risk in 2019 Q1 was 1.89%. The low level of borrower default risk in 2020 Q3 is largely attributable to high levels of refinance volume. For Ginnie Mae loans, borrower risk decreased in 2020 Q3 relative to 2020 Q2 from an average of 6.26% to 5.92%. Ginnie Mae loans are generally lower credit score/higher loan-to-value ratio loans.

UNDERWRITING RISK RESULTS: 2020 Q3

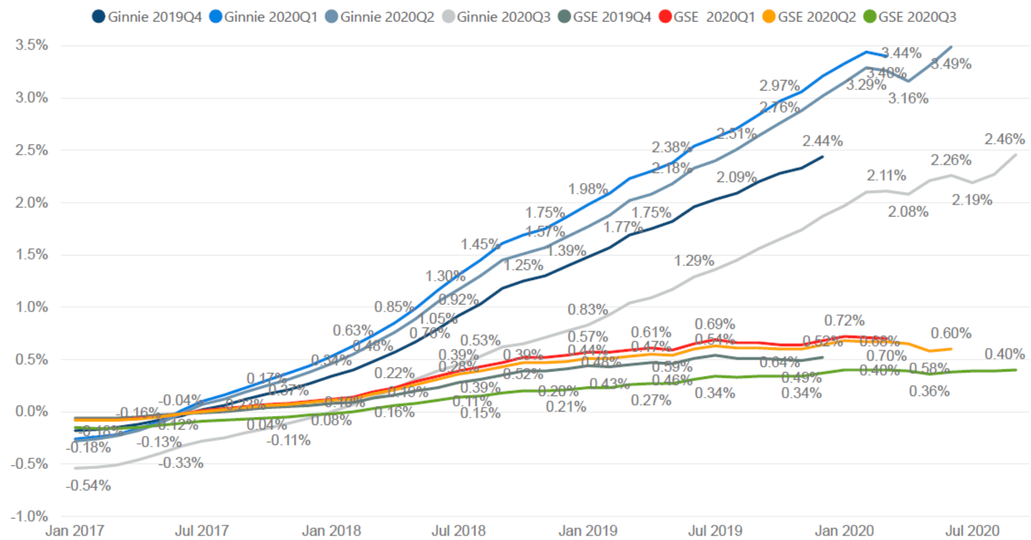
Underwriting risk represents additional risk adjustments for property and loan characteristics such as occupancy status, amortization type, documentation types, loan term, and others. Underwriting risk after the global financial crisis remains low and is negative for purchase mortgages, which were generally full documentation, fully amortizing loans. In 2020 Q3, we have seen an increase in the percentage of refinance loans that are rate or term. This loan type has a lower risk profile relative to cash-out refinance mortgages.

ECONOMIC RISK RESULTS: 2020 Q3

Economic risk is measured by looking at historical and forecasted home prices. Actual home price appreciation has been robust from 2014 through 2020, which has resulted in embedded appreciation for older originations. This results in reduced credit risk for older cohorts. For more recent cohorts, we continue to anticipate slower home price growth (or negative growth for some local geographies), which contributes to increases in economic risk for recent origination years. Please read the disclaimer for COVID-19 for more context on economic risk.

Figure 3 shows the economic risk component of the MMDI for Ginnie Mae mortgages and GSE mortgages as of 2019 Q4 through 2020 Q3. This value increased from 2019 Q4 to 2020 Q1 as a result of the pandemic and anticipated negative impact on home prices. It has since corrected itself, thus resulting in lower economic risk and ultimately a lower MMDI. Additionally, home price growth continued its upward trend, resulting in a decrease in the MMDI in 2020 Q2 and 2020 Q3.

FIGURE 3: ECONOMIC RISK BY INVESTOR AND ORIGINATION



For more detail on the MMDI components of risk, visit milliman.com/MMDI.

About the Milliman Mortgage Default Index

Milliman is expert in analyzing complex data and building econometric models that are transparent, intuitive, and informative. We have used our expertise to assist multiple clients in developing econometric models for evaluating mortgage risk both at point of sale and for seasoned mortgages.

The Milliman Mortgage Default Index (MMDI) uses econometric modeling to develop a dynamic model that is used by clients in multiple ways, including analyzing, monitoring, and ranking the credit quality of new production, allocating servicing sources, and developing underwriting guidelines and pricing. Because the MMDI produces a lifetime default rate estimate at the loan level, it is used by clients as a benchmarking tool in origination and servicing. The MMDI is constructed by combining three important components of mortgage risk: borrower credit quality, underwriting characteristics of the mortgage, and the economic environment presented to the mortgage. The MMDI uses a robust data set of over 30 million mortgage loans, which is updated frequently to ensure it maintains the highest level of accuracy.

Milliman is one of the largest independent consulting firms in the world and has pioneered strategies, tools, and solutions worldwide. We are recognized leaders in the markets we serve. Milliman insight reaches across global boundaries, offering specialized consulting services in mortgage banking, employee benefits, healthcare, life insurance and financial services, and property and casualty insurance. Within these sectors, Milliman consultants serve a wide range of current and emerging markets. Clients know they can depend on us as industry experts, trusted advisers, and creative problem-solvers.

Milliman's Mortgage Practice in Milwaukee is dedicated to providing strategic, quantitative, and other consulting services to leading organizations in the mortgage banking industry. Past and current clients include many of the nation's largest banks, private mortgage guaranty insurers, financial guaranty insurers, institutional investors, and governmental organizations.

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