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Summer 2021

In This Issue

Residential MSR Market Update – July 2021

By Michael Carnes, Managing Director, MSR Valuations

GSA Pricing: Month-Over-Month

Over the month of June, primary mortgage rates were mostly flat, while the CMS curve flattened significantly – with 2-year CMS rates backing up 10 BPs and 10-year CMS rates falling 15 BPs.

During the same time period, the MIAC Generic Servicing Assets (GSAs™) saw price increases across all sectors, with a UPB-weighted increase of 0.85%. However, there was considerable variation across segments: Conventional 30 Year Index (i.e., 30YR_CONV) increased by 0.31%, the Conventional 15 Year Index (i.e., 15YR_CONV) increased by 1.39%, the GNMA-II 30 Year FHA Index (i.e., 30_GNII_FHA) increased by 0.62%, and the GNMA-II 30 Year VA Index (30YR_GNII_VA) increased by 2.58%.

This disparity in price changes reflects differences in cohort-specific OADs, OACs, and spread duration as well as realized differences in OAS.

GSA Pricing: YTD

The increase in primary mortgage rates since the end of 2020 was thwarted in the 2nd quarter, but with little impact to value. While fear typically sells faster than fame, the good news is that the Q2 correction did little to shake investor appetite, as buyers largely believe that over the remainder of 2021 rates will slowly trend higher and the time for MSR investment is now. Relative to December 31, 2020, primary mortgage rates are now higher by 33 bps versus.

YTD, the overall GSA index increased by 18.6% on a UPB-weighted basis. As is evident from Figure 2 below, there is significant disparity across product segments. For example, within 30-year GNMA-II, VA cohorts appreciated substantially more (49.8) than FHA cohorts (19.4). This underscores the need to distinguish the sub-cohorts within GNMA-II. As we've highlighted in recent webinars, the credit and prepay performance of FHA and VA collateral are very different. These behavioral differences are an important distinguishing feature of our CORE™ family of residential models.

MIAC's Generic Servicing Asset (GSA) MSR benchmarking tool is a unique source of collateral-adjusted pricing analytics. Please contact your MIAC Sales Representative for additional information.

Credit and Forbearance Update

While there is Good News

From its peak of 8.5% in early June 2020, the Mortgage Bankers Association's latest Forbearance and Call Volume Survey revealed that as of June 13, 2021, the total number of loans now in forbearance is 3.93% or roughly 2.0 million homeowners. In the latest report, the share of Fannie Mae and

	RunID	Pricing Times	CMS 2Y	CMS 5Y	CMS 10Y	2Y/10Y	FN15 PMR	FN15 CCY	FN30 PMR	FN30 CCY	FN 30/10Y	GN30 PMR	GN30 CCY	HY51 PMR	1x10 Swaption
Current Time	1	2021-06-30 15:00:01	0.3286	0.9479	1.4188	1.0902	2.3150	1.2053	3.0790	1.8379	0.4191	2.6220	1.6941	2.8600	43.27
Previous Time	1	2021-05-28 15:00:01	0.2299	0.8896	1.5685	1.3386	2.3230	1.1956	3.0580	1.8471	0.2786	2.6010	1.7218	2.9800	42.77
		Change (bps)	9.87	5.83	(14.97)	(24.84)	(0.80)	0.97	2.10	(0.92)	14.05	2.10	(2.76)	(12.00)	0.50

Product	Total UPB (billion)	Avg Loan Size	WAC	WALA	WAM	OAS	OAD	OAC	Net Serv Fee (bps)	Price Current (bps)	Price Prev (bps)	Price Change (bps)	Serv Multiple Current	Serv Multiple Prev	Multiple Change	% Price Change
15YR_CONV	293.5	150,880	3.049	24	153	1169.0	-14.4	-1.8	25.00	71.14	70.17	0.98	2.85	2.81	0.04	1.39%
30YR_CONV	2,164.8	189,330	3.846	36	319	1154.8	-21.2	-0.4	25.00	81.51	81.25	0.25	3.26	3.25	0.01	0.31%
30YR_GNI_FHA	23.8	144,526	4.818	53	302	1461.3	-24.5	5.6	37.05	59.44	57.45	2.00	1.60	1.55	0.05	3.48%
30YR_GNI_VA	3.8	143,734	3.668	97	252	1134.9	-18.8	-1.6	44.00	122.49	119.29	3.20	2.78	2.71	0.07	2.68%
30YR_GNII_FHA	839.0	182,255	3.865	36	320	1424.7	-29.8	-0.6	33.00	71.68	71.24	0.44	2.17	2.16	0.01	0.62%
30YR_GNII_FHA_STREAM	83.1	250,911	3.336	8	347	1518.7	-33.5	-9.1	33.00	87.78	86.78	1.00	2.66	2.63	0.03	1.15%
30YR_GNII_VA	438.8	209,895	3.537	29	326	1325.7	-33.2	-5.9	33.00	87.43	85.23	2.20	2.65	2.58	0.07	2.58%
30YR_GNII_VA_IRRL	173.0	277,956	2.965	8	346	1236.9	-32.9	-18.8	33.00	108.01	105.64	2.37	3.27	3.20	0.07	2.25%
Total	**4,019.7**	**189,454**	**3.715**	**33**	**309**	**1243.7**	**-24.6**	**-2.1**	**28.14**	**80.52**	**79.85**	**0.68**	**2.86**	**2.84**	**0.02**	**0.85%**

Figure 1: Month-over-Month Pricing by Product

	RunID	Pricing Times	CMS 2Y	CMS 5Y	CMS 10Y	2Y/10Y	FN15 PMR	FN15 CCY	FN30 PMR	FN30 CCY	FN 30/10Y	GN30 PMR	GN30 CCY	HY51 PMR	1x10 Swaption
Current Time	1	2021-06-30 15:00:01	0.3286	0.9479	1.4188	1.0902	2.3150	1.2053	3.0790	1.8379	0.4191	2.6220	1.6941	2.8600	43.27
Previous Time	1	2020-12-31 15:00:03	0.2010	0.4333	0.9295	0.7285	2.2300	0.6025	2.7470	1.3282	0.3987	2.2900	1.0282	2.8500	56.65
		Change (bps)	12.76	51.46	48.93	36.17	8.50	60.28	33.20	50.97	2.04	33.20	66.59	1.00	(13.38)

Product	Total UPB (billion)	Avg Loan Size	WAC	WALA	WAM	OAS	OAD	OAC	Net Serv Fee (bps)	Price Current (bps)	Price Prev (bps)	Price Change (bps)	Serv Multiple Current	Serv Multiple Prev	Multiple Change	% Price Change
15YR_CONV	293.5	150,880	3.049	24	153	1169.0	-14.4	-1.8	25.00	71.14	65.02	6.12	2.85	2.60	0.24	9.41%
30YR_CONV	2,164.8	189,330	3.846	36	319	1154.8	-21.2	-0.4	25.00	81.51	72.42	9.09	3.26	2.90	0.36	12.55%
30YR_GNI_FHA	23.8	144,526	4.818	53	302	1461.3	-24.5	5.6	37.05	59.44	42.36	17.08	1.60	1.14	0.46	40.32%
30YR_GNI_VA	3.8	143,734	3.668	97	252	1134.9	-18.8	-1.6	44.00	122.49	70.35	52.13	2.78	1.60	1.18	74.10%
30YR_GNII_FHA	839.0	182,255	3.865	36	320	1424.7	-29.8	-0.6	33.00	71.68	60.03	11.65	2.17	1.82	0.35	19.41%
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Total	**4,019.7**	**189,454**	**3.715**	**33**	**309**	**1243.7**	**-24.6**	**-2.1**	**28.14**	**80.52**	**67.91**	**12.62**	**2.86**	**2.41**	**0.45**	**18.58%**

Figure 2: Year-to-Date Pricing Change by Product

Freddie Mac borrowers in forbearance dropped to 2.05%. The number of Ginnie Mae loans in forbearance is now 5.15% and private-label securities is now 7.98%. The most recent decline of 11 basis points marks the 16th consecutive week of falling forbearance rates and a steady, low level of new requests.

Concerns Remain …

It should be noted that more than 44% of borrowers who exited forbearance since the latest report did so by using a deferral plan. The hope is that borrowers who have lost their jobs will return to work and resume making mortgage payments. However, those that require an interest rate reduction or a combination term extension, or an interest rate reduction and principal deferral; servicer pressure is mounting. This is especially true for firms that service Ginnie Mae loans because Ginnie does not directly reimburse servicers for advances when a loan goes delinquent. Instead, the servicer must buy the loan out of the securitized pool to stop paying the advances, which requires even more cash.

In response to these extended forbearance terms, MIAC's MSR Valuation Team uses lower cure rates for borrowers with forbearance terms that extend beyond 12 months.

Prepayment Update

While 30-year primary mortgage rates continue to hover around 3%, the share of refinanceable mortgages has nevertheless declined significantly over the past year due to significant refinance activity. Over 40% of the outstanding agency universe at the start of 2020 have since been paid down, either due to refinancing, housing turnover, delinquent loan buyouts, or amortization. Furthermore, new loans securitized since January 2020 have a WAC of around 3.0%, so most are not in-the-money for refinancing.

Still, for 30-year MBS with coupons above 2.5%, the risk of refinance is substantial.

Prepays for 2020 vintage 3.0% coupon TBA pools averaged 55 CPR over the past three months. Although older vintages have accumulated a significant amount of burnout, 2015-2017 cohorts are still prepaying above 45 CPR. This is because burnout is a complicated dynamic phenomenon. For example, when rates hover around new lows, previously burned-out cohorts can display renewed refinance sensitivity.

Although 2020 vintage Fannie Mae 2.5 30-year is still prepaying in excess of 30% and Ginnie Mae II 2.5 30-year in excess of 40%, look for refinance activity to eventually slow as mortgage rates rise to the 3.25-3.75% range by year-end. Assuming this happens, don't underestimate the competition. Whether through ongoing improvements in technology and/or a willingness to make up in market share what they lack in margin, look for sustained price wars as rates back up. In other words, the Primary to Current Coupon spread will narrow as current coupon level rise. Correctly specifying this relationship is key for MSR valuation and especially MSR risk sensitivities and hedging.

MSR Transaction Update

The MSR market was dormant for much of 2020 but has drastically improved over the last several months. Despite the lack of GNMA bulk transfers in the 1st Quarter of 2021, $169 billion of agency MSRs officially changed hands in Q1 2021. Large Agency deals (usually $5 billion or greater) can garner looks from over 20 prospective buyers with an average of 12 bids per deal. Portfolio size and origination channel can drastically influence who bids and at what level they bid. For example, third party originated deals can execute as much as 10 basis points below a retail offering. Most depositories avoid wholesale and correspondent MSRs and often will not bid and/or not be competitive in their pricing.

Conversely, several non-depositories with efficient retention efforts don't mind third party originated MSRs as much based on their ability to aggressively target for recapture themselves.

Smaller Agency deals (i.e., less than $5 billion UPB) usually execute at a discount compared to larger offerings, because of the reduced economies of scale and reduced competition. Successful buyers of especially smaller offerings have been "keeping it simple". Many will incorporate deducts into their base offering price and due to rising home price appreciation, some are showing a willing to wave certain rep and warrants including VA indemnifications. Sellers of both large and small offerings should ensure that their data is clean and complete which should improve not only liquidity but also execution price. Sadly, this isn't always easy - so it is imperative to start as early in the sales process as possible. This is especially true of MSR trades that involve a sub-servicer; it is sometimes the case that sub-servicers are missing key fields required for a successful transaction.

Bulk

Due to changing market conditions, trade levels are a continuously moving target, but recent conventional deals have been executing in the following ranges:

- 4% Note Rate – 2.9 to 3.2 multiple
- 3.75% Note Rate – 3.2 to 3.5 multiple
- 3.50% Note Rate – 3.5 to 3.8 multiple
- 3.25% Note Rate – 3.8 to 4.1 multiple
- 2.75% Note Rate – Mid to even high 4 multiple

These levels correspond to "large" transactions – which generally attract a more significant number of participants. Large transactions are generally defined to be larger than $3 billion UPB for Agency-only collateral and larger than $5 billion UPB for mixed Agency and GNMA collateral. The higher threshold for mixed transactions is due to the increased transactional burden in terms of investor approvals, etc.

Interestingly, the market has now evolved to the point where buyers are regularly incorporating recapture into their bid prices. Even higher note rate offerings can sometimes fetch a premium depending on the collateral. At a hypothetical gain on sale margin of 1% and a lifetime CPR of 15% servicers can expect around 2.5 bps of economic benefit for every 5% of the customers that they recapture – and numerous buyers will pay a premium for this benefit but will often cap the payout at around 10% for Agency and 20-25% for GNMA.

As recapture becomes more efficient and their cash flows grow in economic significance, it is increasingly important that cash flow engines explicitly incorporate these gains on sale margins. The common practice of lowering prepayment speeds to boost market value is wholly inadequate for calculating risk sensitivities and forecasting accurate cash flows.

"MIAC's Generic Servicing Asset (GSA) MSR benchmarking tool is a unique source of collateral-adjusted pricing analytics."

Large transactions often trade at a premium to Co-Issue. This is due to a combination of:

1) Who the buyers are of the larger packages are
2) What their economies of scale are and how much recapture they incorporate into their bid

Conversely, acquisition expenses will often find their way into a bulk bid but is rarely noticed on a large trade vs. a smaller trade. Whereas a large trade may fetch 20 or more views, and smaller trades can be half of that amount, or even less, depending on the offering.

GNMA execution levels will depend on whether the pools have been forbearance impacted. Some buyers will pay full price for forbearance impacted MSRs, but most will not. Look to early buyouts to improve the marketability and price of any prospective GNMA MSR offerings. If you'd rather not fund the buyouts with your own funds, there may be firms out there willing to fund some of those buyouts on your behalf. It's unlikely they'll look at VA or FHA assets that have been previously modified, but it may be worthwhile to investigate. If it turns out that the assets don't cure, there is a liquid market for EBOs. "Out-of-the Money" large GNMA deals generally execute in the low to mid 3x range but will vary greatly on age, service fee, average balance, geography, and VA concentration.

Co-Issue

Co-Issue multiples are finally back to pre-COVID levels! In March/April of 2020, the co-issue market pretty much dissolved. As an example, buyers set their par rates to 1.75% and wouldn't pay for anything that was 100 bps or more outside of their defined par rate. After key announcements from the FHFA it seemed that buyers were raising their prices every week. Today, Co-Issue can be the outright best execution. This was clearly the case in the 4th Quarter of 2020 when $83 billion was sold via co-issue. More recently, aggregator pricing has improved and is reducing the amount of co-issue sold, but even now co-issue tends to be the best execution about 20% of the time.

What does that mean for prices? Agency Co-Issue multiples are in the low 4x range before any adjustments. FHA Co-Issue multiples at 44 bps are in the low 3x range and at 19 bps are in the high 2x multiple range before any adjustments. As a result of faster VA prepay speeds, on average VA generally trades 10-12 bps below FHA. To be eligible for a GNMA Security, a borrower must make 6 consecutive payments since their last refinance. However, we often observe actual VA VPRs as high as 70-85 in the 7-10 WALA range. These disparate age profiles underscore the need for fully separate prepayment models for VA and FHA collateral. For additional details, request access to the first installment of our CORE™ Webinar series.

When benchmarking Co-Issue with Bulk, it is important to compare fully adjusted pricing on the former. Base prices need to be adjusted for state, loans size, remittance type, FICO, LTV and % of TPO.

In the best-execution world that we all live in, Co-Issue volume will rise and fall with how aggressive the aggregator pricing is, but it helps to have options especially with buyers that have no minimum delivery requirement. Please reach out to your MIAC Sales Representative to get more information about establishing your firm on Fannie Mae's Servicing Market Place or Freddie Mac's Xchange.

Whole Loans: Mid-Year Market Update

By Brendan Teeley, Senior Vice President, Whole Loan Sales/Trading

GNMA Early Buyouts (EBOs)

EBO pricing is at record highs as APM 20-07 increases the burden on servicers and owners to re-pool their delinquent GNMA loans. The requirement of 6-month consecutive payments means that borrower must be current for effectively 7 consecutive months prior to re-pooling. This re-performance requirement creates both performance (i.e., some assets will not re-perform) and rate risk (i.e., those assets which do re-perform will have significant duration). This duration risk is exacerbated by the fact that re-performing loans have slower voluntary prepays than clean current loans. Left unhedged, a rate rise could reduce or even eliminate much of the potential profit. This reality has compelled many owners to sell into record-high pricing, in many cases recouping all expenses. The owner has then laid off nearly all risks, including compliance, litigation, foreclosure, interest rate, performance, HUD Score Card, and perhaps, most importantly, headline risk.

The three most recent large transactions have been bought by large funds in pursuit of attractive risk-adjusted yields. Pricing has consistently centered around par of Total Balance, subject to loan-level detail. Pricing has been strong enough to justify a true sale as opposed to the popular financing opportunities that have been a common strategy in recent years. These financing structures have carried both interest rate and performance risk and the opportunity to avoid these significant potential downside exposures has been compelling.

Scratch and Dent (S&D)

The Scratch and Dent market continues to push through to higher prices and lower yields for buyers as capital sources shift toward the space. The biggest problem in the space is a lack of product availability, both in deal size, but also in total volume. There is plenty of capital available, and sellers with sizable deals ($5mm+) are receiving better pricing.

We do expect that increasing mortgage rates have reduced the opportunity of using a refinance to cure defects. This will ultimately lead to more selling rather than curing, a similar cycle that we have seen in recent years. When rates increase, the benefit to borrower hurdle becomes a more costly one that often points towards a sale as a preferred resolution.

COVID deferrals have certainly added a layer of complexity to these transactions as well. Also, record production generally results in higher defect rates, due to over-stretched staff as well as time limits in purchase transactions. However, the elevated gain-on-sale margins experienced by originators in recent quarters allow for more than a complete offset of the price discounts reflected in scratch and dent activity.

Fix and Flip

The Fix and Flip market has grown considerably with the introduction of two very large sources of capital this year. These non-owner-occupied (i.e., NOO) loans have 1–3-year terms, carry note rates in the 6-9% range and are primarily made to professional investors. Despite the soaring home prices, there is still money to be made in the renovation space and the originators in that space are reporting large increases in production as well as the opportunity to charge higher interest rates and capital trails demand. All rate and term refinance markets inevitably run their course – either through a rate backup or a re-setting of the outstanding mortgage universe. The Fix and Flip market provides originators with an opportunity to maintain volume in a flat or rising rate environment. In addition, originators can grow their client base and have the opportunity for multiple transactions per client.

NPL

Non-Performing loans have benefitted from the nationwide increase in HPA over the last few years. For example, according to the FHFA, nationwide home prices rose 15.7% between April 2020 and April 2021. Other indices exhibit similar or larger gains. Higher home prices benefit the NPL market by increasing self-cures, increasing the probability of a foreclosure alternative (such as short sales), and lowering loss severities upon liquidation.

However, the confounding fact is that COVID (and the resulting servicer guidelines and foreclosure and eviction moratoria) has made forecasting liquidation timelines highly problematic. As discussed in the Liquidation Timelines piece in this issue of MIAC Perspectives, the transition of loans from Seriously Delinquent to either Liquidation (i.e., via short sale) or to REO loans has completely stopped.

This backlog of foreclosure cases will likely lead to greater strategic defaults and prolonged judicial proceedings. It may well be the case that borrowers will be able to stay in homes without making any payments for even longer than we saw during the GFC in 2008-10. An activist CFPB will further burden servicers.

An unintended consequence of COVID deferrals - equity stripping by accumulated deferred payments - will show up in reduced borrower mobility in the coming years. A high-LTV borrower, such as an FHA purchase borrower that rolled in their closing costs and perhaps even the down payment, is especially vulnerable to this reality. Despite the rapid increase in home values, the accruing interest and escrow advances may outpace home price appreciation. We have seen in the last downturn how a borrower with limited equity, the opportunity to occupy the property for a lengthy period before losing title and occupancy, and protection from deficiency judgments may have little motivation to resume or continue making mortgage payments.

A Closer Look at Liquidation Timelines in MIAC's CORE™ Models

By Dick Kazarian, Managing Director, Borrower Analytics

Introduction and summary

In our Winter 2021 Edition of MIAC Perspectives, we provided an overview of our updated CORE™ Residential Models for Credit, Prepayment, and Loss. We identified six major features which distinguish these CORE models from alternative models available in the analytics marketplace. In the latest edition of MIAC Perspectives, we take a closer look at one of these important distinctions: our methodology for handling Liquidation timelines. We cover the following topics:

- The mechanics of liquidation timelines in our CORE framework
- Why foreclosure timelines don't tell the whole story
- What factors drive liquidation timelines
- How have timelines been impacted by COVID
- How do timelines impact whole loans

The mechanics of liquidation timelines in our CORE framework

We define the liquidation timeline for a residential loan to be the number of months it takes to resolve a distressed asset, from initial delinquency through final resolution. An important complication is that a loan can liquidate with a loss via many possible paths – and each of these paths has different potential timelines.

To explain the relationship between a transition model and liquidation timelines, a little background is needed. The role of a transition model is to project the future evolution of a loan based on the loan attributes and the macro-economic assumptions. In other words, the model needs to predict the probabilities of all feasible delinquency statuses every month in the future. For example, consider a loan that starts out as current (i.e., C). The transition model will predict the probability that the loan remains current, misses a payment, and transitions to D30, or prepays at the end of the month.

In any transition model, liquidation and prepayment are inactive (or terminal) statuses. In other words, once a loan transitions to either a loss liquidation or a prepayment, it remains inactive. In contrast, serious delinquency (SDQ) and REO are active statuses. For example, consider a loan that is currently four months delinquent (i.e., D120). That loan can cure to a less delinquent state, remain in D120 by making

	Active States						Terminal States	
	C	D30	D60	D90	D120+	REO	LIQ	PIF
C	x	x						x
D30	x	x	x					x
D60	x	x	x	x				
D90	x	x	x	x	x			
D120+	x	x	x	x	x	T/L	T/L	
REO						x	T/L	

The transition probabilities labeled "T/L" govern LIQ timelines in our framework

Figure 1: CORE Transition Model Framework

a payment, miss a payment and thus migrate to D150, or liquidate with a loss.

Figure 1 shows the transition possibilities that exist in our CORE transition model framework. Following standard practice, the rows display the loan status at the beginning of the month (i.e., BOM) while the columns display the end of month status (i.e., EOM). For example, starting from Current (i.e., C), a loan can transition over the next month to three possible future statuses: D30, PIF (i.e., paid-in-full), or C (i.e., remain current). Figure 1 also displays the distinction between active states and the inactive states of PIF and LIQ (loss liquidation). As Figure 1 makes clear, there are two ways that a loan can incur a loss liquidation. This first is to migrate to REO and then proceed to a liquidation of that REO. In this case, the servicer takes title to the collateral and then proceeds to sell it. Empirically, these resolutions are overwhelmingly completed foreclosures, but also include a small number of deed-in-lieu resolutions. A second possibility is an immediate transition from D120+ to liquidation. In this case, the servicer never takes title to the REO. These resolutions are mostly borrower-titled short sales, but also include a small number of third -party take-outs and write-offs.

Liquidation timelines are an output – not an input – of our framework

Within our transition framework, there is a one -to-one correspondence between these transition probabilities and average liquidation timelines. The lower the probability of leaving serious delinquency (here, defined as D120+), the longer it will take, on average, to liquidate. And the longer it takes to liquidate, the higher will be the expected months delinquent when liquidation does finally occur. We designate the primary transition probabilities governing these timelines with a "T/L". Stated differently, liquidation timelines are an outcome of our model, not an input to

the model. This is the only way to maintain consistency within a transition model framework. To see this, consider a simplified framework where loans can only liquidate from a completed foreclosure and subsequent REO liquidation.

In that case, the average liquidation timeline will be driven entirely by two transition rates: D120->REO and REO->LIQ. Any loan attribute or macro-economic factor which reduces those transition rates will increase the average amount of time the loan spends in D120+ or REO, and thus increase average liquidation timelines. In the more complex structure underlying our CORE Residential Valuation Model, average liquidation timelines will also depend on the resolution mix predicted by the model.

Why foreclosure timelines don't tell the whole story

Since liquidation can occur either through REO (i.e., Foreclosure) or non-REO (i.e., short sales), average timelines will be a mixture of these two resolution types.

And short sale timelines are considerably shorter than REO timelines, especially in Judicial states. This distinction would not be important if short sales were rare. However, short sales are a large and growing component of overall liquidations. The relative importance of short sales is displayed in Figures 2-4.

We extracted monthly transition rates on D120+ loans from the FHLMC single-family LLD dataset with observation dates between January 1999 and December 2019. These data were selected to exclude the COVID period. Figure 2 plots the D120->REO transition rate, while Figure 3 plots the D120->LIQ transition rate.

The most obvious takeaway is that D120->REO rates have declined continuously since hitting a peak before the Great Financial Crisis (i.e., GFC). In sharp contrast, D120->LIQ rates have increased dramatically since 2012 (in part because of the Servicer Settlement). Figure 4 displays the ratio of these two outcomes.

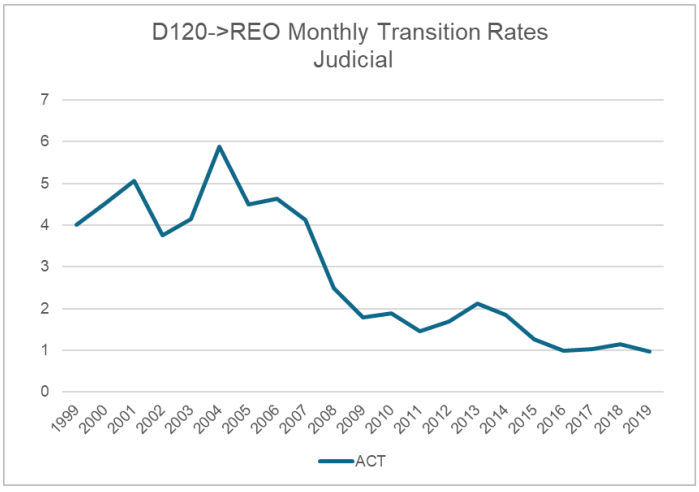


Figure 2: D120->REO Monthly Transition Rates (Judicial States)

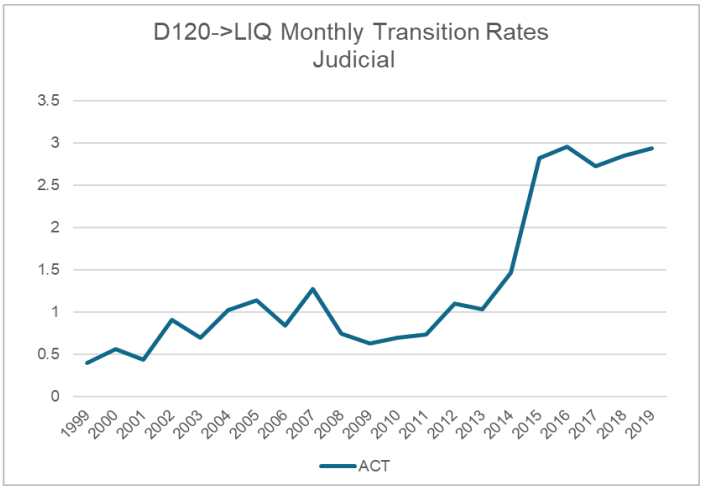


Figure 3: D120->LIQ Monthly Transition Rates (Judicial States)

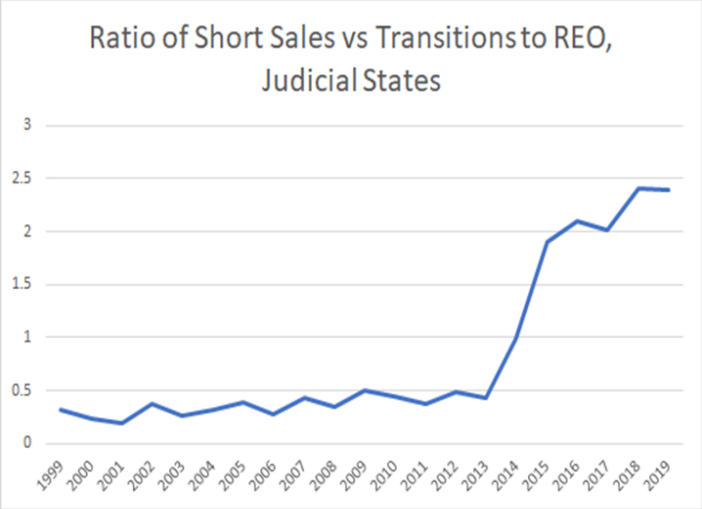


Figure 4: Ratio of Short Sales vs Transitions to REO (Judicial States)

As is evident, the short sale to REO resolution ratio has increased ten-fold from 0.25 to 2.5! We limited the sample to Judicial states, but the overall patterns for the power of sale (i.e., POS) states are very similar, except that the D120->REO rates for POS states are generally higher. The overall conclusion from the above discussion is that ignoring the resolution mix and focusing exclusively on foreclosure timelines alone will result in Liquidation timeline estimates that are too long. And with collateral with a high propensity for short sales in slow Judicial states, this over-estimate can be quite large. Moreover, there is good reason to believe that with continuing foreclosure moratoria and new CFPB servicing guidelines, short sales may play an even bigger role in the future.

Our CORE model projections reflect the importance of short sales

Another way to see the relative importance of short sales is to analyze projections from our CORE model. We selected a hypothetical moderately seasoned FHA loan (age = 35 months), with a $350k balance, FICO=575, DTI=45, and an MTM LTV of 110. The initial delinquency status was assumed to be clean current. These weak credit attributes imply a cumulative liquidation rate of about 12%. We then ran this loan in an average Judicial state and an average POS state. The liquidation results are displayed in Figure 5. At each liquidation month, we show the REO and short sale (i.e., SS) mix conditional upon liquidation. Several conclusions are apparent. First, there is no possibility of a short sale liquidation until month 5, and no possibility of an REO liquidation until month 6. Second, short sale liquidations dominate early on, and especially so in Judicial states. Third, even after 24 months, short sales continue to comprise a significant fraction of total liquidations.

	POS		Judicial	
	REO-LIQ	SS-LIQ	REO-LIQ	SS-LIQ
Month(s)	Prob	Prob	Prob	Prob
1-4	0.0%	0.0%	0.0%	0.0%
5	0.0%	100.0%	0.0%	100.0%
6	8.3%	91.7%	4.8%	95.2%
7	16.7%	83.3%	9.8%	90.2%
8	24.8%	75.2%	15.0%	85.0%
9	32.5%	67.5%	20.2%	79.8%
10	39.6%	60.4%	25.2%	74.8%
11	46.0%	54.0%	29.9%	70.1%
12	51.7%	48.3%	34.3%	65.7%
24	81.1%	18.9%	68.4%	31.6%
48	83.6%	16.4%	80.3%	19.7%
84	84.9%	15.1%	77.8%	22.2%

Figure 5: Probability of Liquidation Type by Liquidation Month

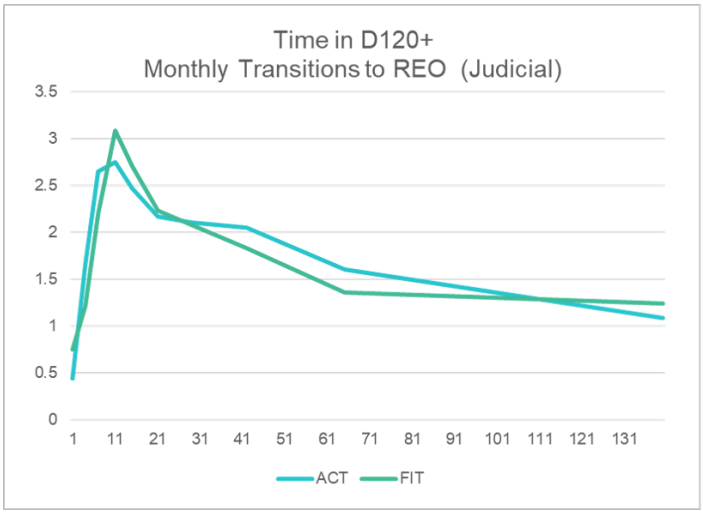
One implication of this changing mixture is that average Liquidation timelines will increase over time. Although these are probabilities projected by our model, one can think of these as the average outcomes from a homogeneous pool of loans with the above characteristics. In a geographically diverse pool, the changing resolution mixture would be much more dramatic.

What factors drive liquidation timelines

Any factor that impacts the three key transitions (D120->REO, D120->LIQ, and REO->LIQ) will impact the average Liquidation timeline. These factors include loan attributes (e.g., high FICO loans are more likely to short sale), the property's geographical location, and even the economic environment (e.g., lower home prices and higher unemployment extending timelines). Figure 6 shows the importance of time spent in serious delinquency (which, as noted above, we define to be D120+). Generally speaking, the longer the loan has spent in D120+, the less likely it is to migrate to REO. This is true for both Judicial and POS states, but the pattern is somewhat different. The "humped" pattern for Judicial states motivated our decision to develop separate models for the two groups. Note also that our

D120->REO model fits the data quite well. Finally, while time-in-state is input data for D120+ loans as of the launch date of the projection, this variable needs to be propagated consistently within the forward simulation. Although this involves additional run-time computations, the increased accuracy justifies the effort.

Figure 7 shows that there is considerable variability within the broad Judicial/POS dichotomy. We divide monthly D120->REO transitions into more granular state sub-groupings and list some of the larger states within each sub-group. For example, the slowest POS states (e.g., CA and MA) have average D120->REO rates of only 1.9 – which is similar to the typical Judicial state. The fastest POS states are nearly three times faster (at 5.5%). We see the same dispersion



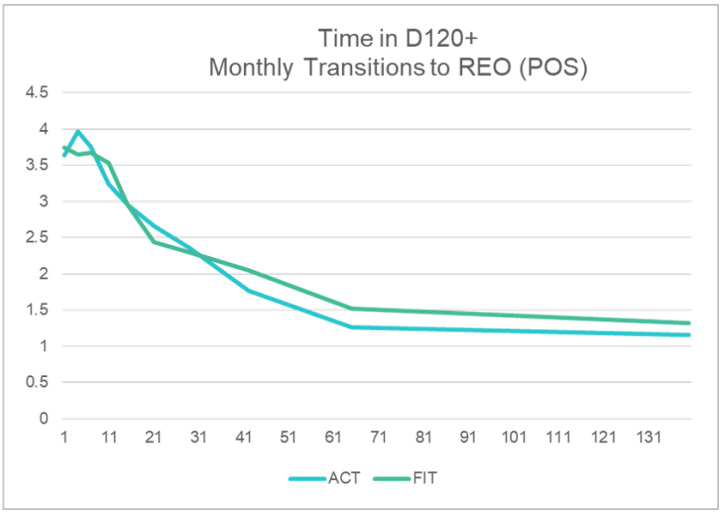


Figure 6: Time in D120+ Monthly Transitions to REO (Judicial) and Time in D120+ Monthly Transitions to REO (POS)

	POS		Judicial	
Grouping	States	Average	States	Average
Fast	GA, AZ, MI, MO	5.5	CO, OH, IN, WI	3.5
Middle	TX, VA, NC	3.5	PA, FL, CT	1.8
Slow	CA, MA, MD	1.9	NY, NJ, ME, VT	0.5

Figure 7: Variability within the POS and Judicial Segments

among Judicial states, with NY and NJ being the slowest by far. Note the significant amount of dispersion across state sub-groups: the fastest POS states are more than 10 times faster than the slowest Judicial states (5.5 v. 0.5). In addition, our research shows that there is substantial variability in D120->REO transitions within states. For example, NYC is substantially slower than NY as a whole. Similarly, Miami Dade county is much slower than FL overall. These geographically based observations are particularly important because many portfolios which MIAC analyzes – either in our whole loan or MSR valuation groups – are geographically concentrated. And the implications for NPLs or low credit quality RPLs can hardly be overstated.

How have timelines been impacted by COVID

It is well known that policy risk is a major consideration in mortgage analysis, and COVID has provided yet another example of this exposure. As a result of forbearance mandates, foreclosure and eviction moratoria, servicing guideline updates, and other factors, migrations from D120+ to either REO or LIQ had collapsed by March 2020 and have not yet recovered to pre-pandemic levels. Figure 8 shows the conventional D120 ->REO transition rates for Judicial states, and Figure 9 shows the D120->LIQ rates during the COVID period. POS states exhibit the same pattern; details are omitted.

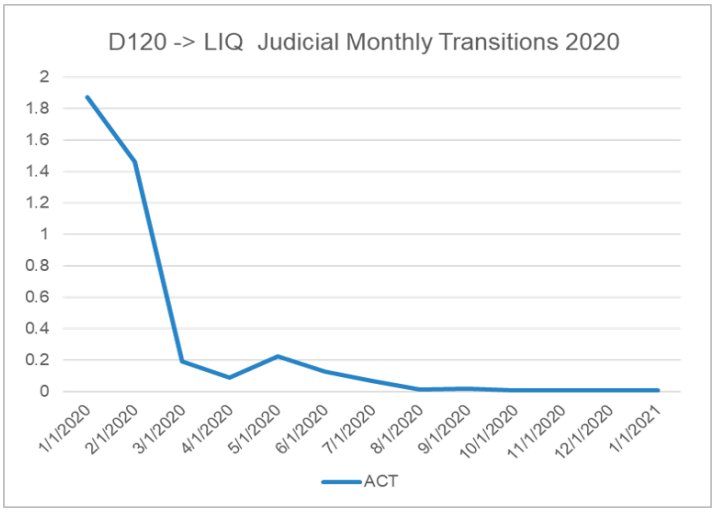


Figure 8: D120->REO Judicial Monthly Transitions 2020

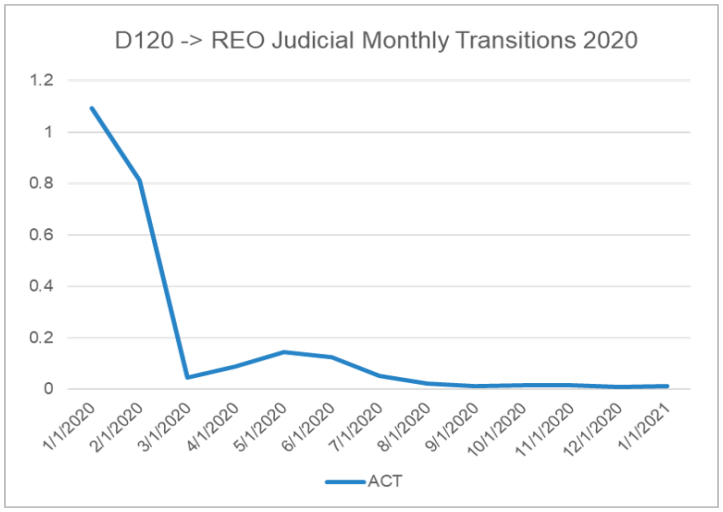


Figure 9: D120 ->LIQ Judicial Monthly Transitions 2020

Impact on whole loans

Whole loan investors should be concerned about Liquidation timelines because longer timelines imply (1) a longer period to recover funds on a defaulted loan and (2) a lower net recovery rate when the funds are ultimately received (i.e., a higher loss severity). And the higher the probability of default, the greater the impact will be. In the extreme case of an NPL where default liquidation is almost certain, lower recoveries will lower prices on a roughly dollar-for-dollar basis.

As we indicated in the Winter 2021 Issue of MIAC Perspectives, our CORE loss severity model has numerous advantages over many competing analytical frameworks. These strengths include a great fit to the historical loan-level loss data, component-level projections, full integration with our transition model, and a full array of explanatory variables.

In this section, we'll just highlight the marginal impact of timelines on losses.

To display the impact of Liquidation timelines on Loss Severity, we took a hypothetical conventional loan with the following characteristics: UPB=300k, LTV=90, Loan Purpose = Purchase, and a note rate of 3.75%. We then varied the inputted Liquidation timeline into our CORE severity model, holding all other factors fixed, and computed the marginal effect of timelines on each loss severity component.

The impact of Liquidation timelines is displayed in Figure 10. Timelines (represented as months past due, or MPD) is contained in the first column. The first panel shows the impact of MPD on the loan, assuming the property is domiciled in NY state. We display four components of loss severity: property loss, taxes and insurance (T+I), Maintenance, and Legal fees. Delinquent accrued interest is directly proportional to MPD, does not require any estimation, and is not displayed here. The second panel examines the same loan, but the computations assume the property is located in CO.

	New York					Colorado				
MPD	Prop Loss	T+I	Maint	Legal	Total	Prop Loss	T+I	Maint	Legal	Total
1	21.2	0	5.5	2.8	29.6	21.2	0	5.6	2.8	29.7
12	22.5	3.3	6.1	3.2	35.3	22.5	1.2	6.5	3.2	33.6
24	24.0	6.9	6.7	3.7	41.5	24.0	2.8	7.5	3.7	38.2
36	25.5	10.6	7.3	4.1	47.8	25.5	4.4	8.6	4.1	42.8
48	27.0	14.3	8.0	4.6	54.1	27.0	6.1	9.6	4.6	47.5
60	28.4	18.0	8.6	5.0	60.3	28.4	7.7	10.6	5.0	52.1
72	29.9	21.6	9.2	5.4	66.5	29.9	9.3	11.7	5.4	56.6
84	31.4	25.3	9.8	5.9	72.7	31.4	10.9	12.7	5.9	61.2

Figure 10: Liquidation Timelines Impact on Whole Loan Loss Severities for NY and CO

Several points regarding Figure 10 merit consideration. First, property losses actually increase with MPD, likely due to accumulated deferred maintenance or even active malevolence on the part of homeowners or non-owner occupants. Second, the tax and insurance components are directly proportional to MPD. Further, the slope is higher in higher tax jurisdictions (like NY). Relative to CO, this means that NY has two distinct disadvantages: it has longer average timelines and it has higher T+I costs per MPD.

Third, similar to T+I, maintenance expenses increase proportionately with timelines. In contrast to T+I, Maintenance expenses are significant even with immediate liquidation (i.e., MPD=1).

Note also that CO has somewhat higher Maintenance expenses per MPD than NY, but this is more than offset by NY's significantly higher T+I. Furthermore, the effects of T+I and Maintenance are LTV-dependent. Although low LTV loans are less likely to incur a default liquidation, they will incur higher T+I and Maintenance costs relative to UPB if liquidation occurs. Finally, legal expenses increase with MPD. But like Maintenance expenses, legal expenses can be substantial even if timelines are very short.

There is much more to say about Liquidation timelines, their impact on both whole loans and MSRs, and our loss model. We'll save these topics for future editions of MIAC Perspectives.

MIAC Product Support Update

By Lisa Malie, Managing Director, Product Management and Support

Felicia Reynolds, Managing Director, Product Management and Support

Behind the Scenes

MIAC Analytics offers a diverse range of products and services to a wide audience of clients. In turn, it takes a dedicated team of professionals to support, maintain and evolve these products and services in a dynamic marketplace.

MIAC's Product Management and Support team plays an integral role in our industry-leading effort to meet the ever changing needs of our clients.

Our Support team has the privilege of working across all functional teams within MIAC delivering services that include:

- Product Management
- Model Implementation
- Quality Assurance/Testing
- Sales and Marketing Assistance

Our most important role, however, is supporting MIAC's clients through:

- New Client Implementation
- Software Training
- Software Documentation
- Software Support
- Product Enhancement

Our Product Management and Support Team addresses client's questions in a variety of ways:

Support Mailbox

Send your questions, support requests, and product enhancement suggestions to support@miacanalytics.com, and someone from our team will be happy to assist.

Product Support Quarterly Newsletter

Sign up today to be "in the know" as we highlight software features, new releases, and tips and tricks for using MIAC's software to its fullest potential.

Client Support Portal (CSP)

Use MIAC's CSP to monitor and review support requests and search our Knowledge Base of articles, application tips, and FAQs.

Asset Forum

Take advantage of MIAC's resource center to access user manuals, software release notes, monthly data downloads, and other training materials.

Visit our website for more information about how we assist our clients in meeting their goals and objectives using MIAC's products and services. We look forward to your feedback!

GNMA RG Pools: Delivery, Pricing, and Performance

By Paul Raebel, Managing Director, Loan Sales and Delivery

Delivery and Pricing

Beginning on February 1st, 2021, Ginnie Mae instituted new requirements for how re-performing loans must be pooled. These new pools are referred to as C RG pools and consist entirely of loans that have been bought out of Ginnie Mae pools.

What is a re-performing loan? Simply put, Ginnie Mae defines a re-performing loan as a loan that was bought out of a Ginnie Mae pool, is not more than 30 days delinquent, and hasn't been modified (i.e., the current rate and terms are unchanged from the time the loan was originally sold to Ginnie Mae).

If a loan meets this definition of a re-performing loan (See Ginnie Mae MBS Guide, Chapter 18 for more detail), there are a few other criteria that need to be met to qualify for inclusion in a C RG pool. One requirement is that the loan entered a "COVID-era" forbearance. That is, it must have entered forbearance on or after March 1, 2020, and it must have been bought out of the pool on or after July 1, 2020.

Finally, the loan must have made Timely Payments (defined by GNMA as a full monthly payment made no more than 30 calendar days after its scheduled due date) and the Issue Date of the new pool must be at least 120 days from the loans most recent delinquency. In other words, the loan must have been current for at least 4 months. As discussed below, this re-performance requirement has an important impact on subsequent credit and prepayment performance.

What other requirements are there for the loans that make up C RG pools? All of the loans in a C RG pool must fall within the standard Custom pool requirements. These Custom pool requirements include: the UPB must be at least $1,000,000, the interest rates on the pooled loans must be at least 25 basis points but not more than 75 basis points above the pass-thru rate (i.e. coupon) on the securities, the buydown % must be less than 10% of the pool, the % of high-balance loans cannot exceed 10%, at least 90% of the loans in the pool must have homogenous terms (i.e. short term loans in a long term pool must account for less than 10% of the original UPB) and at least 80% of the loans in the pool must have a maturity date that's within 30 months of the latest maturity date in the pool.

After a pool made up of loans that meet all of these requirements has been assembled, there are a few final requirements to ensure a

successful delivery with Ginnie Mae. All of the loans must be identified with a loan purpose code of "5" for Re-Performing Loans and the RG Certification Flag must have a value of 'Y' on the GinnieNET import file.

Meeting and verifying these pooling and delivery requirements can be significantly more challenging and time-consuming than many originators are used to. However, the effort is certainly worthwhile as RG pools can trade at a significant premium to TBA. These pricing premia can exceed 2+ points for higher coupons. For further information about our Mortgage Delivery and Due Diligence Services, please visit our website or contact your MIAC Sales Representative.

Performance

Re-performing GNMA loans have lower monthly voluntary prepayments than otherwise similar GNMA loans which are always current. Within FHA, monthly prepayment rates are about 40% lower than always current loans – after adjusting for collateral characteristics such as LTV, UPB, state, and other prepayment drivers. However, this % prepayment reduction itself varies significantly by refinance incentive. The impact on in-the-money loans is much larger than the impact on out-of-the-money loans. This is perhaps initially surprising given the flexibility embedded in the FHA streamlined refinance program. However, it should be kept in mind that a significant fraction of FHA refinances are "FHA-to-Conventional", where the streamline requirements are not applicable.

Within VA, the impact of prior delinquency on voluntary prepays is a much smaller 25%. This is unsurprising since "VA-to-Conventional" refinances are much less common than "FHA-to-Conventional" refis. And similar to the FHA evidence cited above, the impact of prior delinquency is greater for loans which are in the money. The above effects concern monthly prepayment rates or the direct effect of re-performing status on prepayments. But for long-term prepayment projections (such as average life equivalent VPR), there is also an indirect effect at play. In particular, re-performing loans (i.e., blemished currents) are much more likely to migrate back to D30 and worse. And when they do, monthly prepayments from these delinquent states drop dramatically. This interplay between credit transitions and voluntary prepayments underscores the need to jointly model these outcomes in a competing risk framework.

The twin effects of re-performing status on prepayments and credit on pool-level terminations go in opposite directions. Voluntary prepayments decline and also become less rate-sensitive, which lowers both average prepayment rates and convexity costs. However, buyouts will be higher due to the elevated re-default rates on re-performing collateral.

RG pool pricing is indicating that the prepayment effect generally dominates the credit/buyout effect so that total pool-level terminations are lower for RG pools. This is also consistent with analysis using our internal models. As we have discussed in

prior webinars, the importance of payment history on credit and prepayment behavior is an important distinguishing feature of MIAC's Core Family of Residential Models.

Sources for Delivery Mechanics include Ginnie Mae MBS Guide (Chapters 18 & 24), Ginnie Mae Modernization Bulletin # 5, APM 20-07, APM 20-13, and APM 20-15. Sources for Empirical Performance include GNMA MBS Disclosure Data and internal MIAC calculations.

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