MIAC Perspectives

Summer 2016

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In this Issue

In this Summer issue of Perspectives, we take a close look at the MSR market which is still in Brexit-related turmoil, while examining some of the excellent MIAC tools available to help you thrive in a rapidly evolving market.

Specifically, we provide an introduction to perhaps the biggest change in financial institution-based accounting ever with an article on CECL; We have a timely article on the current state of the MSR market; We provide an enhanced MSR market valuation tool which we call GSA (generic servicing assets); and finally three articles written by key MIAC market participants that were featured in the MBA handbook titled Mortgage Banking in 2020. We hope you find much value in our Summer issue of Perspectives.

Edited by:

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CECL – Current Expected Credit Loss: A CORE Competency?

Current Expected Credit Loss ("CECL", ASC 825-15) is the Financial Accounting Standards Board's (FASB) new model for calculation of loan loss reserves, which requires consideration of multiple scenarios looking out over the lifetime of the instrument. These standards replace those now in use for preparing Allowance for Loan & Lease Losses, ("ALLL"), purchased credit-deteriorated assets, available-for-sale, and held-to-maturity debt securities. [1]

CECL represents a dramatic adjustment for banks, credit unions, and financial institutions, regardless of asset size. Financial institutions will be required to use both historical information and current conditions, in addition to reasonable forecasts to estimate the expected loss over the life of the loan. CECL's tenets were provided by FASB on June 16th, with joint OCC, FDIC, NCUA and FRB guidance on June 17th. Per the Joint Statement, we expect that more detail will follow, and the standard will be implemented in 2020-21.

This, and other accounting pronouncements introduced since the crisis of the mortgage industry differ from precedent in that the new standards for both reserving and capital adequacy are forward-looking, based upon expectations of future cash flows under plausible scenarios, rather than on historic losses to date.

Comparison of New and Existing Standard

The existing methodology is known as the "incurred loss" approach. CECL is a single measurement approach, which, remarkably, is both a simpler and more sophisticated cash flow and scenario loss modeling approach. The outgoing standards encompass a number of different impairment models. These incurred loss models substantially precluded consideration of possible future losses under possible, but not probable, circumstances. The existing approach has also been known as the Event-Driven Approach.

The new approach is grounded in how mark-to-market cash flows are modeled. Future loss provisioning, or the Allowance for the Loan and Lease Losses, ("ALLL"), may now differ from past experience, and may take into account both individual firms' loss history and losses that may ensue assuming possible future economic events.

Since the ALLL is a balance sheet reserve for "expected" new losses, the iterative practice is to model the total expected losses for a pool, then subtract the current "charged off" amount to arrive at the current period "provision". Per the joint supervisory guidance, the ALLL is treated as a valuation account, so revising the definition of what is expected will be powerful, and will drive new requirements for profound enhancements to be made in portfolio data capture, and reporting & risk management procedures.

The ALLL represents "spent money" unavailable for dividends or stock computations.

The revised standard effectively formalizes analytical methods that MIAC has been practicing with our clients for over a decade. Firms will now be required to perform cash flow forecasting for collateral assets segmented into buckets of like characteristics (in contemplation of vintage, geography, LTV, and other factors) blended with lender and servicer experience, and in consideration of macro and micro-economic scenarios.

Why have the changes been implemented?

In the aftermath of the last financial crisis, the outgoing methodology was criticized for not sufficiently incorporating forward-looking information when assessing the need for an

allowance for credit losses (the ALLL), for using too broad an approach in forecasting performance on widely differing pools of lenders and loans, and for delaying recognition of changes or problems.

The CECL standard effectively makes sure all future losses under reasonable scenarios are incorporated into the ALLL, which is the gold standard.

Next Steps:

While the regulators are telling financial institutions not to increase their reserves prior to implementing CECL, they are advising that preparation and planning should commence. The stakes are substantial. Thomas Curry of the OCC has said in remarks in September 2013 at the AICPA Banking Conference that it is likely that bank ALLLs could increase by 30% to 50% due to the adoption of CECL. A transition to CECL will require lenders and servicers to adopt detailed record-keeping, track loan-level credit performance in a time series format, validate for compliance purposes, and benchmark their records against industry metrics.

Challenges for many institutions may arise in an arduous process to track performance over time, and to load, audit, reconcile, normalize, and store vast volumes of time series data in a consistent, useful, and accurate manner. There will also be heightened attention on procedures for handling the current period data, including error-checking, data exceptions, and reporting, as these data fields allow accountants and stakeholders to visualize and understand pool composition, forecasting, and provisioning.

While the standards and thresholds are certainly being raised, the new pronouncement allows institutions to apply judgment in developing estimation methods that are appropriate and practical for their circumstances. Lenders will need to establish greater data storage and analytical requirements, and will demand enhanced coordination between functional areas to accurately focus the institution's talents and judgment for the forecasting of expected losses under the new parameters.

The same standards and practices are generally being applied to smaller institutions as well as larger ones, as the implementation of DFAST, the Dodd-Frank Asset Stress Test, will continue to spell out and specify the levels of capital required, and crucially, what counts as capital going forward.

Entity Type	U.S. GAAP Effective Date	Regulatory Reporting Effective Date*
Public Business Entity(PBE) that are SEC filers (SEC filers)	Fiscal years beginning after December 15, 2019, including interim periods within 2020	31-Mar-20
Other PBEs (non-SEC filers)	Fiscal years beginning after December 15, 2020, including interim periods within 2021	31-Mar-21
Non-PBEs (non-SEC filers)	Fiscal years beginning after December 15, 2020, including interim periods beginning after December 15, 2021	31-Dec-21
Early application for all entities	Early application permitted for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years	

*For institutions with calendar year ends

MIAC Perspective

MIAC has built advanced analytical tools and provides services to help the lending and accounting profession prepare for this transition and to execute seamlessly.

With specific advances in data management and mining, and comparisons to national populations and including comparison across alternate geographies and vintages, we currently have successfully implemented CECL's requirements for many institutional clients of various types.

Data Products and Surveillance: *DataRaptor – Surveillance*™ is an extension of DataRaptor ® and is used to measure client specific loan portfolio's collateral payment performance over time. Voluntary prepayments, involuntary prepayments, transition roll rates, FCL_Entry and Exit behaviors and REO_Exit behaviors at the loan portfolio level is measured. Loan portfolios can be auto loans, unsecured consumer loans, credit cards, residential or commercial mortgages, for example. The portfolio specific measurements will feed into models for cash flows valuations based on realized incurred losses, transitional credit events, roll rates, cure rates, timelines and severities observed in portfolios at the loan-level. The granularity and utility of MIAC's borrower behavior modeling is unmatched.

Due Diligence and Data Scrubbing: MIAC can help clients fix erroneous and missing data via several means, including due diligence solutions using our VeriFi™ software, or through the use of our historical data analytics to provide appropriate averages or minimums based on the data sets.

MIAC's unit, Mortgage Delivery Specialist ("MDS") is recognized as the industry leader in resolving complex data capture and data auditing necessary to enable seasoned residential mortgages successfully delivered to the Agencies.

Behavioral Models: MIAC has led the way in modeling financial instruments under a variety of macro-economic scenarios, and has tailored models to test for those established by regulators or by institutions. We have produced and maintained proprietary voluntary prepayment, default and loss models which react to macro-economic and loan characteristic scenario variables, as well as customized models for lender and servicer collateral experience.

MIAC CORE™, our loan behavior suite, has proven to be an extremely accurate forecaster of defaults and losses in back testing and out-of-sample tests. This is because our software simulates cash flows with great granularity – at the loan level, period by period, into the future. And, importantly, the simulation starts with the current delinquency status of the loans and evolves forward in the simulation to produce a highly accurate timing of expected losses.

For the Residential Mortgage CORE™ voluntary and involuntary models, we use historical loan level data on approximately 85 million residential loans which span from Fannie, Freddie, Ginnie Mae, and Private Label Securities loan products across the full spectrum of trustees and servicers, going back as far as 1991.

These curves are segmented at the state, servicer and vintage level. Currently, we have unique foreclosure and REO curves on approximately 425 servicers.

MIAC is well-positioned to help our clients adapt to the challenges presented by CECL.

MultiScenario Analysis: Finally, the client's inventory of loan assets can be simulated under the same interest rate and macro factor scenarios within the **Vision**™ balance sheet simulation tool. The multi scenario simulation is important for loans that have embedded options such as residential mortgages. Vision is used for CCAR/DFAST stress testing as well as market risk, capital planning and NII simulations.

Dean Hurley, *Director, Capital Markets Group*
Jeffrey Zuckerman, *Vice President, Capital Markets Group*

[1] Existing Regulatory and GAAP standards include:

- The "Uniform Retail Credit Classification and Account Management Policy", Federal Register Vol 65, No 113, Monday June 12, 2000
- FAS 5 /ASC 450-20 – General Credit Impairment (Impairment present but not manifested) / Contingencies
- FAS 118 / ASC 450-20 – Troubled Debt Restructuring
- FAS 114 / ASC 310-10 – Non-Performing Loans (Manifested Impairment)
- FAS 141R / ACSC 805 and SOP 03-3 / ASC 310-30– Acquired Loans
- FAS 115 / ASC 325-40 – Interests in securitizations

An update on the MSR market following Brexit

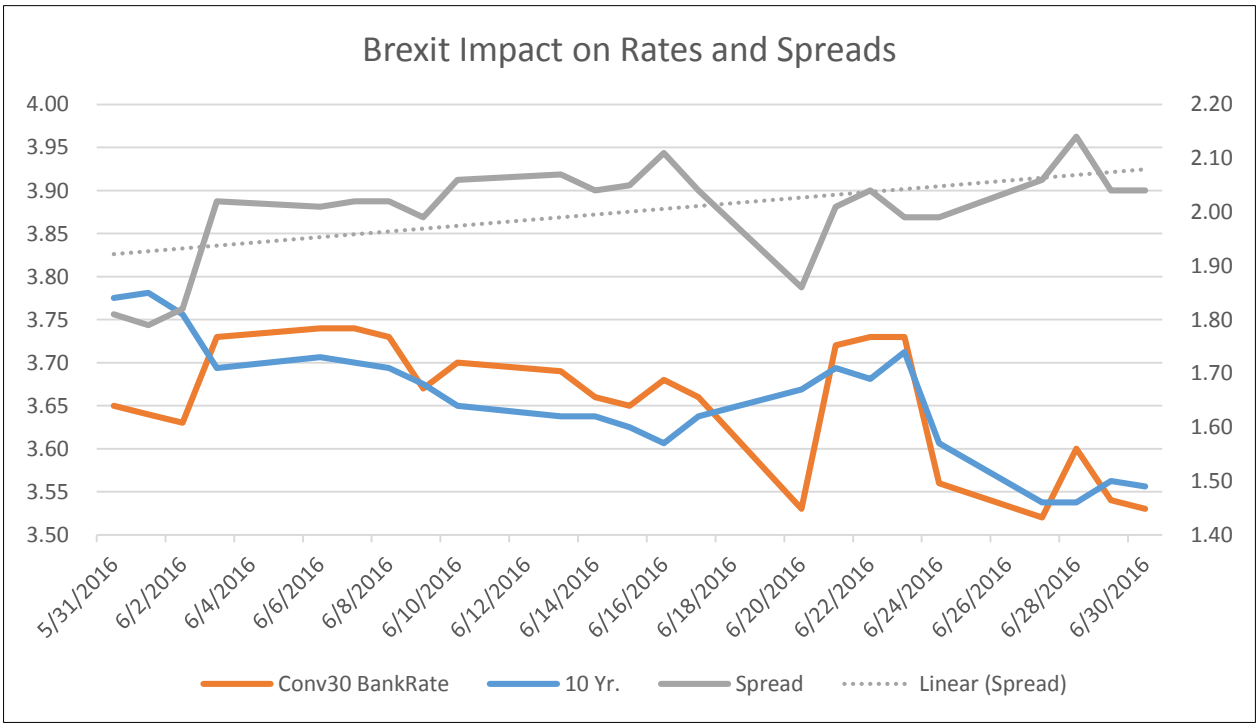
Home mortgage rates tend to move in the same direction as U.S. Treasuries but as-is traditionally the case, seldom is there a one-for-one relationship. Such was the case on Friday, June 24, 2016, when the US Market awakened to the knowledge that the British electorate voted to leave the European Union which meant the beginning of a two-year negotiation over the terms of departure from the E.U.

On Thursday June 23rd 2016, the Bankrate 30-year fixed-rate mortgage closed the day at 3.73% vs. the 10 Year Treasury at 1.74% for a spread of 199 basis points. Fast forward to the close of business on June 27th when markets finally begin to stabilize and the same 30-year fixed-rate mortgage was now 3.52% vs. the 10 Year Treasury at 1.46% for an adjusted spread of 206 basis points. While volatility has become the new norm, in this single example and over a two business day span, the 28 basis point decline in the 10 Year Treasury resulted in a 21 basis point decline in the Bankrate 30-year fixed-rate mortgage. The below chart clearly illustrates an upward sloping Spread trendline as Mortgage Rates hit 3-Year lows. **Graph one** shows how rates have moved in the recent past.

In addition to using spreads as an offset to rising cost to service, historically spreads are an often used mechanism for controlling volume and the onslaught of refinance applications that can follow a significant rate decline over a very short period of time.

While the impact of lower rates, certainly benefits homeowners and thus application volume, the impact on MSR's can be quite severe. In just one day, MSR values declined by 5 basis points primarily due to the increase in modeled prepay speeds but also due to lower earnings rates which utilizing the 5 Year Swap Rate as an example, declined a full 24 basis points from 1.20% on June 23rd to 0.96% on June 27th.

Graph 1: Brexit Impact on Rates and Spreads



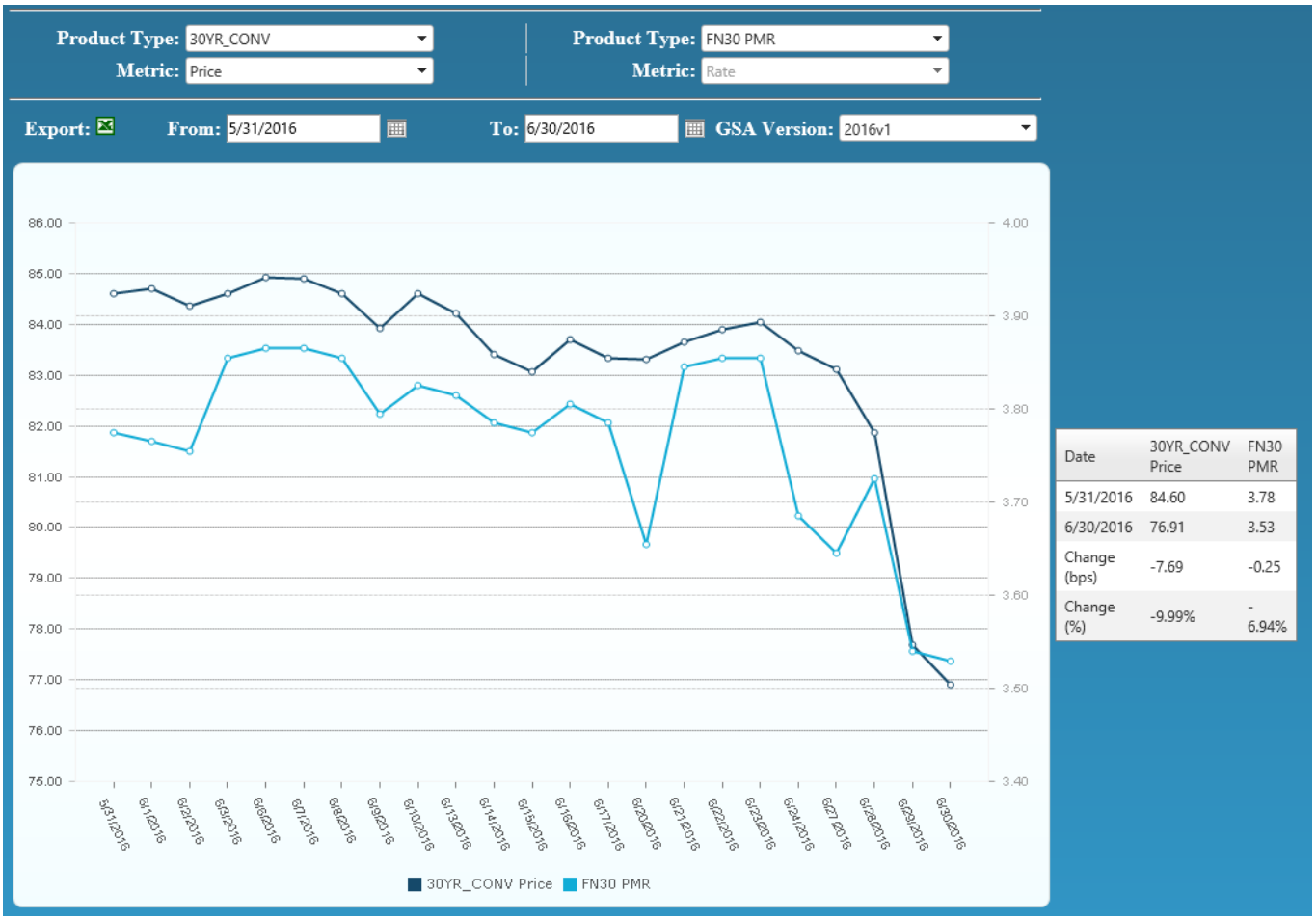
Source: *Mortgage Industry Advisory Corporation*

Buyers and Sellers of MSR Bulk packages immediately felt the impact with most if not all feeling the need to reprice and/or walk away from the deals all together.

As depicted by MIAC's GSA values, month over month, and for the 30 Year Conventional sample analyzed, values were down by slightly less than 8 basis points with most of the decline a direct result of Brexit. **Graph two** illustrates the correlation between the Conventional cohort and the primary mortgage rate.

Mike Carnes, *Director, Capital Markets Group*

Graph 2: Conventional Cohort vs. Primary Mortgage Size



Source: *Mortgage Industry Advisory Corporation*

New Developments Regarding MIAC's Generic Servicing Assets - GSAs™

Many mortgage servicing rights (MSR) market participants have come to rely on MIAC's GSAs over the past 20 years. We are proud to announce several new enhancements to our GSA study.

MIAC GSA's can answer these and other important questions.

- Where are Mortgage Servicing Rights trading today?
- Where can I compare Mortgage Servicing Rights vs. key market indexes?
- Where do I find MSR "market" Option-Adjusted Spreads?

GSA's are MIAC's daily pricing of representative benchmark mortgage servicing rights. As an industry leading broker of MSRs, MIAC's valuations of MSR's are considered the most defensible and accurate in the industry.

The GSA's cover a broad spectrum of the outstanding mortgage servicing population. Where there are large outstanding cohorts of mortgage servicing rights, a GSA is created. The GSA attributes are the aggregated attributes from the actual underlying loan collateral at the product type, coupon, and vintage year cohort level. The loan collateral attributes and the MSR cash flow components of the GSA's change annually so that the daily price changes are attributable solely to market factors only and not portfolio composition changes.

As a reflection of the most optimal market liquidity conditions, MIAC assumes that each new GSA, for example, 2016 GSAs, has an outstanding UPB of $1 billion.

MSR Market Price Indexes

MIAC prices each of these GSA cohorts and aggregates the GSA level prices to the Product Level. The aggregate pricing of each Product Type is weighted by the current outstanding UPB for each GSA cohort, established annually. This means that each Product Type represents a weighted average MSR price index for each underlying collateral type.

Another utility of GSA's is to derive Product Level MSR price indexes to be used to monitor the MSR market movements.

The **GSA Indexes** are listed below:

GSA Product Type	Description
15YR_CONV	15 Yr Fannie/Freddie
15YR_GNII	15 Yr Ginnie II's
30YR_CONV	30 Yr Fannie/Freddie
30YR_FHA_Strml	30 Yr FHA Streamline Refi's
30YR_GNI_FHA	30 Yr Ginnie I's FHA's
30YR_GNI_VA	30 Yr Ginnie I VA's
30YR_GNII_FHA	30 Yr Ginnie II's FHA's
30YR_GNII_VA	30 Yr Ginnie II's VA's
30YR_JUMBO	30 Yr Prime Jumbo
30YR_VA_IRRL	30 Yr VA IRRL's
H_CONV	Conventional Hybrids
H_GNII	Ginnie II Hybrids

The GSA Web Service

GSA Level One subscribers can access the daily GSA pricing in the www.MIAC*Analytics*.com authenticated web site called the Asset-Forum. The GSA Product Level Index price history is also viewable and downloadable. A user can plot the historical movement in mortgage rates against price changes in GSA 30YR_CONV Index. Or see how 30YR_CONV MSRs prices have moved related to the 15YR_CONV.

In addition to the daily MIAC pricing for each GSA, MIAC also computes the Option-Adjusted Spread, Option-Adjusted Duration, and Option-Adjusted Convexity for each GSA. This information is also available to GSA Subscribers. Each Product Type also has a UPB weighted OAS, OAD, and OAC. This means that GSA subscribers can obtain a highly defensible market OAS derived from MIAC pricing and MIAC *Analytics*.

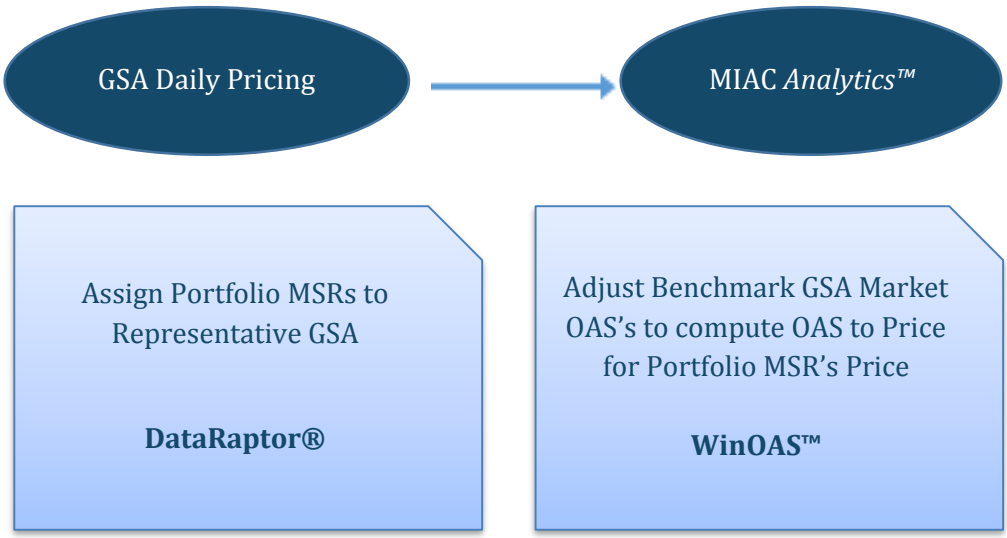
GSA Pricing and Reporting

Level Two GSA subscribers can access GSA prices as a simple download in MIAC Analytics WinOAS™ MSR calculator.

Users can download multiple dates' GSA prices, save to the GSA portfolio, and manage the price repository in the software.

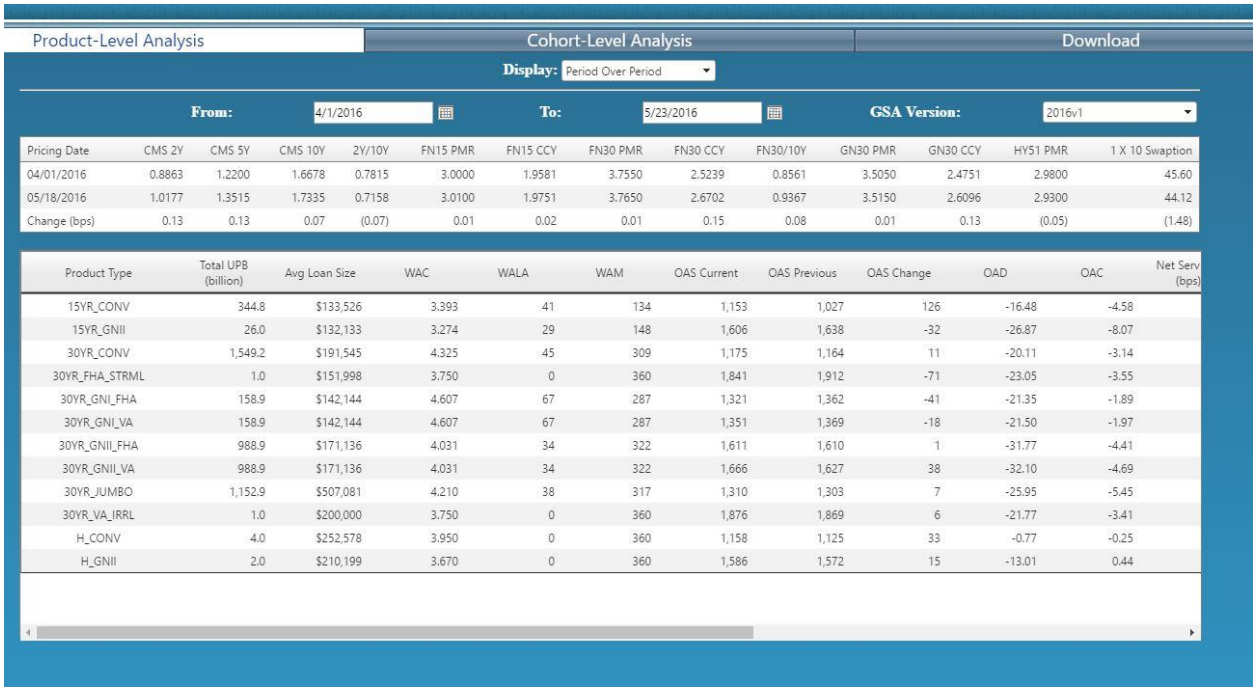
For analysis purpose, users can also generate GSA reports. WinOAS™ currently provides four types of reports that track period-over-period GSA Prices and OAS changes on tranche or product basis.

Additionally, in the GSA portfolio, users can view underlying assumptions that are used to generate daily GSA prices. Users are able to make changes to these assumptions and get customized GSA prices. They can also calculate new OAS's, OAD's, and OAC's based on the assumptions that they deem as appropriate.



An example of **FNMA 30-year 3.5% 2012 multiple compared to its OAS**:

And here is an example of the **product cohorts and their price and OAS changes over time**:



Pricing Date	CMS 2Y	CMS 5Y	CMS 10Y	2Y/10Y	FN15 PMR	FN15 CCY	FN30 PMR	FN30 CCY	FN30/10Y	GN30 PMR	GN30 CCY	HY51 PMR	1 X 10 Swaption
04/01/2016	0.8863	1.2200	1.6678	0.7815	3.0000	1.9581	3.7550	2.5239	0.8561	3.5050	2.4751	2.9800	45.60
05/18/2016	1.0177	1.3515	1.7335	0.7158	3.0100	1.9751	3.7650	2.6702	0.9367	3.5150	2.6096	2.9300	44.12
Change (bps)	0.13	0.13	0.07	(0.07)	0.01	0.02	0.01	0.15	0.08	0.01	0.13	(0.05)	(1.48)

Product Type	Total UPB (billion)	Avg Loan Size	WAC	WALA	WAM	OAS Current	OAS Previous	OAS Change	OAD	OAC	Net Serv (bps)
15YR_CONV	344.8	$133,526	3.393	41	134	1,153	1,027	126	-16.48	-4.58	
15YR_GNII	26.0	$132,133	3.274	29	148	1,606	1,638	-32	-26.87	-8.07	
30YR_CONV	1,549.2	$191,545	4.325	45	309	1,175	1,164	11	-20.11	-3.14	
30YR_FHA_STRML	1.0	$151,998	3.750	0	360	1,841	1,912	-71	-23.05	-3.55	
30YR_GNI_FHA	158.9	$142,144	4.607	67	287	1,321	1,362	-41	-21.35	-1.89	
30YR_GNI_VA	158.9	$142,144	4.607	67	287	1,351	1,369	-18	-21.50	-1.97	
30YR_GNII_FHA	988.9	$171,136	4.031	34	322	1,611	1,610	1	-31.77	-4.41	
30YR_GNII_VA	988.9	$171,136	4.031	34	322	1,666	1,627	38	-32.10	-4.69	
30YR_JUMBO	1,152.9	$507,081	4.210	38	317	1,310	1,303	7	-25.95	-5.45	
30YR_VA_IRRL	1.0	$200,000	3.750	0	360	1,876	1,869	6	-21.77	-3.41	
H_CONV	4.0	$252,578	3.950	0	360	1,158	1,125	33	-0.77	-0.25	
H_GNII	2.0	$210,199	3.670	0	360	1,586	1,572	15	-13.01	0.44	

Jennifer Howell, *Senior Vice President, Capital Markets Group*
Yuqing Lin, *Analyst, Capital Markets Group*

Whole Loan Execution

Residential loans fall into one of two categories: Agency — eligible for programs offered by Fannie Mae, Freddie Mac, or Ginnie Mae (FHA/VA) — and non-Agency. As of late 2015, Agency loans are approximately 90% of new originations. According to the Federal Reserve Board, mortgage debt outstanding in that year totaled approximately $13.5 trillion. By contrast, the private (non-Agency) market consist of just over $1 trillion of this balance. The importance of the non-agency market is disproportionate to its market share, because non-Agency programs, typically sold through whole-loan execution, are often where lenders can find a niche to differentiate themselves from the competition.

Agency vs. Non-Agency Loans

Fannie Mae, Freddie Mac, and FHA/VA issue guidelines defining the loans that that they will purchase. Banks, mortgage companies, and other originators, generate loans that meet those guidelines, allowing consumers access to multiple sources for home lending. Originators compete on rate, price, and service, while providing consistent access to standardized financing vehicles offered by the Agencies. This creates liquidity in the market by providing a known source of funding for mortgage lending.

The non-Agency market, comprising loans that are not purchased by the Agencies, serves a different tier of consumer, many of whom have been left out of the housing recovery due to the drastic reduction in capital sources for non-Agency mortgages since the market down-turn began in 2007. These customers may not qualify for an Agency loan for any number of reasons, including lack of credit history, self-employed income, inconsistent employment history, excluded property type, or loan balance. Non-Agency loans are typically originated by banks to be held on their balance sheet ("portfolio;" hence the term, portfolio lending). In order for this additional risk to be worth it to the portfolio lender/investor, they typically carry an interest rate of 50-150 basis points (bps) over Agency paper. As of late 2015, there is increased demand across various financial institutions for such higher-yielding paper, since prevailing yields have been unacceptably low for many investors for an extended period of time.

Funding for Agency Loans

The vast majority of the $13 trillion mortgage market is funded by mortgage bonds issued by the Agencies list above. The U.S. government issues mortgage debt via bonds and securitizations that are used to fund mortgages for consumers. These instruments are then traded on the open market, allowing institutions and individuals to invest in the housing market with a U.S. government guarantee, virtually eliminating credit risk.

Funding Non-Agency Loans

The source of funding for non-Agency loans primarily consists of private, non-government money from life insurance companies, hedge funds, REITS, large banks seeking yield for their portfolios, securitizations, and some other types of insurance companies. The low interest-rate environment in the mid-2010s compressed Net Interest Margins (NIMs; the profit a bank makes from its lending), and forced depositories and others to seek additional income sources.

This environment makes higher-yielding non-Agency mortgages especially interesting in the *life insurance* market. Historically, this capital has been reserved for the lowest risk investments with the highest liquidity. However, the reduced income from depressed interest rates, combined with the hit to the market value of underlying security accounts, has forced insurance companies to chase yield. Agency loans do not have as high a yield as non-Agency loans; therefore, insurance companies seeking yield often look favorably at purchasing non-Agency loans.

Hedge funds will purchase loans for the yield and cash flow, or, they will aggregate and securitize the loans for sale on the secondary market. Hedge funds have a higher cost of funds than traditional banks because they do not have access to the overnight window or other government money. As such, their primary capital sources are private funds, institutions, and retail investors. These investors require a higher rate of return, which is obtained through leverage compounding the higher interest rate on non-Agency mortgages. By levering their capital, a mortgage that yields 4.5% can be booked with a double digit return.

Hedge funds are also originating and purchasing loans (often via correspondent relationships) to securitize and sell. In the securitization process the debt is rated and tranched, creating a more liquid investment in comparison to raw whole loans. These instruments are sold for a higher premium due to the tranching of both prepayment and credit risk. This allows investors to purchase a specific piece (tranche) of the overall securitization with just the credit risk and cash-flow characteristics it desires to match its liability structure and risk/return profile.

Because hedge funds are not regulated by Dodd-Frank, they can lend to a tier of customers that the Agencies will not serve. Whether it is due to self-employment, credit impairment, down payment limitations, property type, or any number of factors, these investors fill an important need for consumers and the housing market. It is clear from the improvement in the housing market, that coincided with the expansion of the lending universe, that much of the recovery is due to the easing of credit restrictions in lending in the non-Agency market.

There are a limited number of *residential mortgage* REITs in the market. Due to their tax structure, REITs focus on real estate as opposed to debt. The existing residential REITs primarily participate in the market by purchasing loans on the secondary market as opposed to originating new loans. The REIT model is similar to a fund that only buys.

Types of Non-Agency Loans

In the mid-2010s, Mortgage Lenders were venturing into new products that are further down the credit curve and/or allow for impairments that previously may have resulted in prohibitive risk-based pricing adjustments. Specifically, larger *community banks* were underwriting portfolio mortgages to higher loan-to-value ratios (LTVs), lower FICOs, along with alternative doc types. Generally, only one of the three criteria deviates from what make a loan Agency-eligible; another way to say this is that portfolio lenders seek to avoid *excessive risk layering*. Banks still need to be able to justify to regulators why they make a loan, and "the relationship" is not an acceptable answer. As this style of community-bank lending becomes more widespread, the secondary market for these loans is beginning to expand. Other banks are willing to pay a premium for these loans, because they can avoid the overhead associated with retail loan origination, and the higher yields on the loans are adequate compensation for the (perceived or actual) incremental credit risk.

Underwriting for Non-Agency Loans

Non-Agency Loans allow for greater flexibility and customization of the underwriting process. While the underwriting standard must remain transparent, the secondary market is allowing banks to serve a diverse range of borrowers.

Blanket Loans

To serve the needs of landlords and larger property owners, funds sometimes lend against an entire residential portfolio. These are *blanket loans*, secured by as many as 100 properties, typically with a maximum LTV of 65%. The advantage is the cost-efficiency of collecting payments on one loan. The borrower is generally a professional manager, theoretically less likely to default as there is more at stake than one property. There is also additional security afforded by the diversification of the cash flow. If a few properties are vacant, they are funded

by the remaining occupied rental properties. The loans typically feature a five- to ten-year term and are either interest-only, or 20-year fixed rate. The cash flow is underwritten in a manner similar to a commercial loan, with a Debt Service Coverage Ratio calculated to determine ability to support the debt repayment.

Borrowers with Low Credit Scores

Borrowers with low FICO scores, recent adverse credit events including bankruptcy, foreclosure, and mortgage lates, may still obtain a mortgage from a community bank, with the idea being that the loan serves a need in the local community. As an example, our firm has a bank client which will originate a residential, owner-occupied mortgage for a borrower that is one year out of a Chapter 13 bankruptcy with a perfect post-bankruptcy pay history. On the other hand, Agency guidelines require four years pay history from discharge. The logic is that if the borrower paid their Trustee payments on time and has re-established credit, and all the debts were paid as opposed to a Chapter 7 in which the debts are discharged then the borrower has proven the ability to pay obligations in a timely manner. Our client has determined that this is a good risk, and to date has not had a default.

Self-Employed Borrowers

Loans for self-employed borrowers who do not meet Agency guidelines virtually did not exist after the market meltdown until the mid-2010s, when the secondary market began to demonstrate an appetite for them. The loan criteria are consistent with Agency guidelines in terms of LTV, FICO, etc. There is opportunity for lenders to be flexible and differentiate themselves in how they arrive at an understanding of the borrower's income, and the calculations used to determine Ability to Repay. These calculations include verifying income with both business and personal cash flow, understanding the ownership of the business, and understanding the borrower's industry as a whole. Underwriting mortgages for self-employed borrowers requires a deeper understanding of each loan, and of the borrower. Again, it is acceptable to have one deviation from Agency underwriting. As long as the credit and collateral are acceptable, the lender has the ability to manage risk in the income or ability to repay.

Non-bank lenders are originating higher-LTV loans for investment properties. These mortgages require much higher FICO scores, and full income documentation, and significant reserves. The borrower is more likely to default on an investment property than their primary residence, and the occupants of a rental home are less likely to maintain the home; therefore, the bank is less likely to recover a foreclosed property in a marketable condition.

Pricing of Agency and Non-Agency Loans

Funds issuing non-Agency mortgages require a lower LTV, since the loans are not insured by the U.S. government and any losses incurred during the default period are born directly by the investor which owns the loan. Non-Performing Loan (NPL) expenses include deferred interest, default interest, attorney fees, court fees, maintenance fees, and more. Therefore, the equity in the property must be sufficient to cover all fees for foreclosure plus the transaction costs associated with re-selling the property on the retail market. Alternatively, the seller may dispose of the assets via a bulk sale to other funds that specialize in distressed assets. In the mid-2010s, the market for these NPLs priced out at 65 percent, or less of the value of the property. This level represented a significant increase in market values of NPLs from the early stages of the 2007-2008 market contraction, when NPLs typically sold for 30 to 45 percent of the property value. Banks do not typically hold non-accruing assets, including non-performing loans, on their books. The secondary market will purchase the NPLs, allowing the bank to recapitalize.

Pricing of any asset is a relatively transparent indicator of the risk involved in the investment.

The lack of mortgage insurance, any government guarantee, or subsidized capital drives the yield required by the secondary market higher in an attempt to normalize risk and reward. To put it another way, what would an investor have to earn from his investment to make it worth his while to lend to someone that the Agencies would not lend to? This premium is a function of just how far out the loan is on the credit curve. The higher the perceived risk, the higher the yield the investor will require to fund the loan. As of late 2015, this premium was 50 to 150 bps. In the early/mid 2000s the premium could be as high as 650 bps, as lenders originated many loans that ultimately did not perform.

Note that yield is correlated with the market's *perception* of risk. This creates an opportunity for portfolio investors which may have the expertise to safely originate loans for which the market imposes a high risk premium. Not only does this provide the opportunity to earn higher returns in portfolio however once the loans are sufficiently seasoned and the lender can show actual performance of the loans, there may be an opportunity to profitably recapitalize, at a premium, by selling those loans into the secondary market.

A loan's value is a sum of all parts: LTV, Doc type, FICO, and so on. Any one factor can be a compensating factor, and any one can be a deal-killer. In the portfolio space, there is typically the ability to have flexibility in accepting one impairment, assuming the other two are strong enough to compensate. This is the *underlying theme of portfolio lending*: the ability to use compensating factors in underwriting a mortgage. In the 2000s, lenders such as BNC, Countrywide, New Century, First Franklin and Fremont successfully navigated three criteria, providing 100% financing on investment properties, or 100% financing on owner-occupied properties down to a 580 or even 560 FICO, a credit range that is not generally lendable at all in today's environment.

CASE STUDY

A large Midwest bank has a footprint in a major California city with a large concentration of borrowers that are typically self-employed, and whose tax returns do not reflect their cash receipts. This bank took the time to understand the borrowers and the market, including the very strong real-estate values in the city, and the fact that actual bank deposits illustrate a much stronger cash flow than the tax returns would leave a lender to expect. The combination of deeper understanding of the borrowers' cash flows, the exceptional real estate values, a maximum LTV of 65, weighted average LTV of 61, and strong credit scores, allowed the bank a high degree of comfort with the credit risk.

The bank built out a set of guidelines that allowed them to originate hundreds of millions of dollars of loans to this clientele, with not one single 30 day late payment. MIAC was able to identify buyers of these loans on the secondary market. Buyers were able to get comfortable with the underwriting and loan characteristics once the entire story was communicated, and as a result we were able to develop counterparty relationships with investors which would purchase the whole loans from the bank. The creation of this market improved liquidity for the bank, showed bank regulators that the loans were marketable, and provided the buyer a loan portfolio with an above-market yield.

Trending in Lending

Fannie Mae in the 2000s was mandated by politicians to expand lending to borrowers in "underserved" areas in order to broaden homeownership opportunities. Loans were created, such as the My Community, that allowed 100% LTV, and in some case greater than 100% financing.

Underserved is typically defined as a geographic area where there tends to be lower income and lower homeownership rates, without regard to why these situations exist.

Combining more liberal debt-to-income ratios with credit requirements directly led to greater default rates in the neighborhoods that could least afford the instability. The default rate began to accelerate, eroding property values and further accelerating the deterioration of many neighborhoods.

As political pressures increase, lenders will be compelled to provide home mortgages for more and more borrowers, particularly borrowers who currently are not served by the Agency market. We saw this happen in the early 2000s as FHA was compelled by the government to compete with the Sub-Prime market. The government agencies began to originate loans with smaller down payments, or no down payments, in an attempt to recover business from subprime lenders. In 2015, the Agencies re-introduced 100 percent financing, plus seller-paid costs, allowing borrowers to buy a home with little to no financial contribution from their own pocket.

This is relevant for the whole-loan market, because Agency guidelines are generally the starting point for portfolio loan programs. Lenders will take an Agency product and push one or more criteria a bit further out the credit spectrum in the hope of attracting more borrowers and higher yields, the idea being that they are only slightly riskier than what the federal government insures. In the last credit cycle, the Agencies loosened their guidelines, and private and public sectors began to compete on credit—a recipe for disaster.

What this means for the secondary market is that as yields increase, the funds that are sophisticated enough to understand the risk and get out in front of the market stand to profit nicely, assuming they get out at the right time. We have the benefit of hindsight, having the recent mortgage industry contraction of 2007-2008. The current near-zero interest rates have made it difficult for funds to produce a profit for their investors with traditional investments. Portfolio managers have determined that the mortgages available on the market in the mid-2010s provide an acceptable risk/reward relationship and are willing to continue purchasing these loans. Banks will continue to originate such loans for a variety of reasons, not least of which is an active secondary market willing to purchase their loans for a profit.

Non-agency Niche Products

Foreign National, Individual Tax Number (ITN) loans, and loans to borrowers without Social Security numbers, serve a very specific subset of borrower. There is very specific audience for banks willing to underwrite loans for non-U.S. citizens, Resident Aliens, etc. These loans are originated in an even more secure position than the traditional portfolio loans. Typically, the LTV maxes out at 65%, and the documentation type is usually full doc or some sort of asset depletion loan that will provide a documented measure of security. Ultimately, understanding the nature of these borrowers, the security lies in the real estate and the potential to be made whole via foreclosure.

The borrowers are commonly in very specific industries, such as the oil industry in Houston, where a portfolio lender can gain additional relationship business from originating these loans and serving this population. This strategy continues in vacation areas frequented by a concentration of people from a common home country. Miami, Florida, for example, has a large concentration of second homes and vacation condos owned by foreign nationals. The banks that originate these mortgages typically earn a 75bps yield premium.

There is also an even smaller subset of the lending market that originates non-consumer loans. These loans are exempt from Consumer Finance Protection Bureau guidelines. The comparatively unregulated market serves a very specific audience that is commonly more sophisticated and uses such loans as an investment tool. These include investors that participate in renovation or rehab projects with the intent of reselling the property in less than 12 months. The return on the investment is what

makes these loan a practical tool for these borrower. These loans will not be issued against a primary residence. The yields on these loans are typically 500-800 bps through the traditional mortgage market.

What Trading on the Secondary Market Looks Like

Best execution typically comes from a counterparty that is comfortable with the collateral and debt, and is willing to purchase at an above-market price. This may be due to pressure to diversify their holdings, or a lack of yield on the current portfolio, or the belief that, at the margin, the purchase will improve the overall composition of the institution's loan portfolio.

That being said, considerable cost efficiencies can be created by establishing a flow arrangement between two parties. Once the buyer and seller have gone through the resource-intense process of negotiating legal documents, it is easier for them to do future business with each other. There may be an agreement, either formally drafted or, more commonly, an ad hoc relationship, with a mutual understanding that the parties will transact as frequently as appropriate with agreeable terms. The idea is that both parties benefit from the transaction and thus are motivated to continue the relationship with future transactions. If the market moves away from either party there is the flexibility to forgo a trade until the market is more advantageous.

On a bulk sale, the seller seeks to obtain the best combination of price and surety of close, with the lowest risk of "fade" and the most efficient or fastest close. The more experienced buyer from a pool of bidders will often provide the best execution. That is not to say that the highest buyer is the best buyer. There have been known to be bidders who will submit an above-market bid with the intent of locking up the trade. Then the bidder either attempts to re-trade the seller, broker the loans out, raise funds to complete the transaction, or disappears altogether. Of the above, re-trading is the most common adverse outcome. The bidder will dig deeper into the files and realize they are not what they thought. This is generally no fault of the seller, as all bidders had the same information. The bidder in this example simply did not have the experience to understand the nuances of the individual pool, whether it is specific geography, loan type, seasoning, or collateral that is not what they thought it was. This became especially common in the late 2000s, as many firms flooded the market, chasing deals without having much relevant experience. The frequency of this occurrence destabilized the market, as sellers were fooled and buyers would fall out of the space as they realized it was not as easy as they had thought to close these deals.

The Secondary Market for Non-Agency Loans

Mortgages are either sold as mortgage-backed securities (MBS) or as whole loans. Buyers of MBS are purchasing a security that is backed by mortgage loans. Buyers of whole loans are purchasing the actual loan, the note, and mortgage. Whole loans have the potential to be more profitable, however the purchaser must have the infrastructure to underwrite, service (unless loans are sold servicing retained), and perform due diligence.

Some less sophisticated buyers of whole loans will throw a number in a pool, hoping it works out. At the other end of the spectrum, buyers perform nearly complete due diligence on the loans prior to submitting a bid. This cuts both ways, as they may have the best, most accurate bid, however, the people they are bidding against have a wider margin of error that allows them to offer a higher bid. It is not unusual to see bids on a pool of loans ranging from 74 to 92 percent of the unpaid principal balance.

The vast majority of whole loan trades are from aggregators (banks like Wells Fargo or Chase, that can sell directly to the Agencies) or large originators to the Agencies (like Quicken), on a daily or bulk basis. There are additional origination channels, in

the form of mortgage banks and retail or commercial banks, that originate non–Agency loans intended to be sold to other institutions, funds, banks, etc. seeking the higher yields offered by this product. These non-Agency trades will vary in size depending upon the arrangement. It is not uncommon for a large community bank to originate $10-15mm per month of this product to be sold explicitly to a fund or bank that needs the mortgages, but which doesn't have the origination platform to fill this need.

Putting Trades Together

The firms best suited to identify the best counterparties (buyers or sellers) will be firms that have the greatest exposure to market activity. This includes Agency trades, pricing execution, portfolio valuation, and portfolio hedging. It is important to work with a firm that sees as much activity as MIAC, which, by virtue of the breadth of its business activities, has frequent contact with most of the largest originators, funds, banks, and portfolio companies.

The firm you work with must gather the market intelligence needed to identify and engage the best execution for a given trade. This includes an intimate understanding of firms' business models on both the buy and sell side, as well as their pricing requirements and investors' "appetites." Some dealmakers have, at best, a cursory level of understanding of investors' objectives. The lack of depth of understanding often yields a sale that has been put out so widely (shown to too many unqualified buyers) that it becomes a trade that many serious funds will avoid.

Best execution comes from a complete understanding of the seller's needs, both in terms of price and timing, and also in the nuances of the portfolio. The dealmaker you work with must understand these and match the trade with a small number of serious buyers who will focus on the trade and put in a no-fade bid that will close with a very high degree of surety.

Equally important is understanding the current market. There are timing considerations, external events that affect a buyer's ability to focus on a trade, as well as other market considerations. Turning points in Federal Reserve policymaking, such as in late 2015, show that bid levels can vary widely depending upon any given investor's opinion of "what the Fed will do." It is rarely a good idea to "blast" (mass market) a pool, which is what some internet-based firms will do in an attempt to increase their pool of contacts for future deals at the expense of a trade at hand. The best trades are executed through relationships and experience, not the internet. There is much to be accomplished with a phone call or meeting.

Secondary Market Pool Size

Larger pools typically attract a different audience than the typical $10mm trade. There are certain fixed costs associated with a loan trade. For example, legal departments will draw up the same documents whether the trade is one loan or 100 loans. There are certain economies of scale that exist when a buyer schedules man hours for due diligence and closing. This makes the larger trades more attractive to buyers who have the capital to invest. The market participants in larger trades are also generally more sophisticated and experienced when it comes to executing transactions, and tend to have a better understanding of the market and more accurate pricing.

Size can also cause a strong buyer to not participate in an auction that could yield a particularly attractive trade for the seller. When this happens, sometimes a carve-out of the seller's pool may be sold to this high bidder, with the balance being put out for re-bidding by other parties. With this strategy, there is the risk of the previous high bidder(s) bowing out of the trade because the most desirable assets were carved out. Alternatively, an "all or none" sale will be executed if there is not enough spread to warrant multiple trades with multiple counter parties. In this case, the seller will

frequently solicit bids via a whole-loan trader or broker from multiple counterparties. A final bid process provides the potential buyers one last chance to win the pool with a final best execution offer.

There is some value in counterparty diversification by trading a pool with multiple partners; however, there is an obvious increase in transaction costs, as discussed above. There have been times in my career when a deal did not trade for completely unforeseeable reasons that were neither parties fault. Had there been multiple buyers, the trade would likely have closed with one party or the other.

Brendan Teeley, *Vice President, Whole Loan Sales & Trading, MIAC Capital Markets*

What is a Mortgage Servicing Right (MSR)?

By definition a Mortgage Servicing Right, herein referred to as MSR(s), is a contractual agreement where the right, or rights, to service an existing mortgage are sold by the original lender to another party who, for a fee, performs the various functions required to service mortgages. As a servicer, firms are responsible for collecting borrower payments including Principal and Interest as well as Taxes and Insurance, and then remitting those payments to investors, insurance companies, and, if applicable, taxing authorities. If a borrower is late with their payments, it is the servicers responsibility to do everything they can to collect payments and, if necessary, late fees from the borrower. If a borrower fails to make their payments after a prolonged period of time, usually 120 days or more, and if all efforts fail to bring the borrowers current in their payments, servicers must initiate foreclosure and ultimately, liquidate the delinquent accounts. Servicers are also responsible for reporting to investors about the status of their investments and they may be required to advance funds to investors and/or taxing authorities whether the borrower makes their payments or not. Last but not least, servicers must handle all customer and investor questions and requests, and record a satisfaction of mortgage at payoff.

The accounting and reporting for mortgage servicing assets as set forth in FASB ASC 860-50. FASB ASC paragraph 860-50-25-1 requires that an entity recognize a servicing asset or servicing liability each time it enters into a servicing obligation which may be qualified as follows:

- If meeting the requirements for sale accounting, a servicer's transfer of any of the following:
  - an entire financial asset,
  - a group of entire financial assets,
  - a participating interest in an entire financial asset, in which circumstance the transferor shall recognize a servicing asset or a servicing liability only related to the participating interest sold.
- An acquisition or assumption of a servicing obligation that does not relate to financial assets of the servicer or its consolidated affiliates.

After a loan is sold, assuming the servicing has been retained, the MSR should be capitalized at fair value and subsequently accounted for using either the Amortization or Fair Value method. When the MSR is initially capitalized, an asset is recorded to the balance sheet and income is recorded for the full fair value of the asset.

When accounting for MSRs, the fair value of the asset is best determined by observing actual trade levels for similar assets, though actual trade benchmarks can be difficult to obtain. Assuming permissible market conditions and a willing pool of buyers and sellers, MSRs can be a liquid asset, but obtaining the exact execution level negotiated between two private entities can be problematic. As a result, the most commonly used method for determining the fair value of MSRs typically involves a combination of observed and unobserved assumptions. MSRs may be valued on a loan level basis or stratified into tranches of like portfolio characteristics, but regardless of your approach, MSRs can still be a challenging asset to value. Conventional wisdom might suggest that if it cost $125 annually for a firm to service a single MSR then $125 should be the model assumption used when deriving the assets value. Perhaps, that would be the case if fair market buyers were also using $125 as their annual lifetime cost to service estimate, but therein lies the problem! No two firms are created equal when comparing economies of scale, cost of funds, or as

one of many examples, their access to cost reducing technology. While it may cost one firm $125 annually to service a MSR, a buyer with more preferential economies of scale may be willing to pass part of their economic benefit to the seller by agreeing to pay a price that takes into consideration a more preferential cost of servicing. Other key behavioral assumptions used in estimating the net present value of future servicing income are prepayment speeds, discount rates, and delinquency rates. On the revenue side, firms may include items such as contractual service fees, ancillary income (bounced check fees, pay by phone fees, etc.…), late fees, and float income.

With no combined shortage of assumptions that go into deriving the underlying MSR value, considerable judgment is required. Being off on just one assumption could materially affect the estimated fair value of the servicing rights.

Amortization Method

After initially recoding MSRs at fair value, when utilizing the amortization method, commonly referred to as LOCOM or Lower of Cost or Market, MSRs are amortized over the estimated economic life of the mortgage in proportion to the anticipated future net servicing revenue generated from servicing the loan. Over or under amortization is a problem routinely encountered when amortizing MSRs. Ideally the length or term of the amortization should coincide with the Economic Useful Life of the MSR asset. Those who choose to amortize their book value utilizing a straight line amortization technique may fall victim to market fluctuations that can extend or shorten the projected life of a given asset. This is due to fluctuations in primary mortgage rates which may cause a shift in the "In-the-Moneyness". "In-the-Moneyness" refers to a MSR asset or group of MSR assets that, due to a shift in primary mortgage rates, may now have a greater incentive to refinance, thereby increasing projected prepay projections and shortening the projected economic life of the asset. For clarification, prevailing mortgage rates may move in either direction, but if a firm is not proactive in recalibrating the rate of amortization, they may be at greater risk of either over amortization or impairment. MSRs should be evaluated for impairment on a continual basis or, depending on the size of a firm's MSR asset relative to their total net worth, at least every reporting period. MSRs are to be grouped into homogenous risk buckets with the most common breakouts being Product, Term, Note Rate range, and sometimes geography. Impairment occurs when the remaining book value, net of accumulated amortization, is carried at an amount that is greater than the estimated fair market value of the servicing right. In instances where the unamortized book value exceeds the estimated fair market value, a valuation allowance must be recorded to bring the asset down to fair market value. Unless determined that the asset is permanently impaired, in which case a permanent correction may be necessary, the previously impaired asset can be recovered and the valuation allowance reduced through a recovery to earnings often related to a rise in primary mortgage rates which may serve to increase the projected economic life of the asset. This recovery cannot be in excess of the previous impairment, meaning that under the amortization method, it is not permissible to record value in excess of a firm's remaining book value net of amortization. If not already impaired, the amortization method can result in less volatility in earnings and lessen the need or desire to hedge potential volatility because any cushion at the homogenous risk cohort level, while not recordable, can serve as a first line of defense to protect against any volatility created by a downward shift in primary mortgage rates. As illustrated below, an impairment test can look as follows, but be advised that risk stratum must be maintained over time. For instance, just because a particular set of risk buckets are appropriate today, does not mean that this holds true indefinitely. Risk tranches need periodic reevaluation to account for increased product diversity and/or any significant change in primary mortgage rates which may relegate virtually all new originations into a single risk stratum. Be advised that auditors may frown on any embarrassment of riches derived from a shift in risk stratum, but it is equally unadvisable to relegate 95% of firm's assets into a single risk tranche. This can easily occur when a shift in market rates produces a scenario where certain risk tranches are not populated with new production due to a shift in primary mortgage rates, thereby forcing most, if not all, new loan sales into a

limited number of risk strata. Over time this can create an imbalance of risk into a single tranche. If you believe this applies to your current situation, professional advice, including but not limited to, internal and external audit support is advisable.

Note that the amortization method while often perceived as a more conservative method of managing one's balance sheet is more complex than alternative options.

the amortization method largely due to fluctuations in the value having no amortization offset. This means that any change in value will directly affect earnings. The amounts recorded in the balance sheet more closely reflect the true fair value of the asset and will always be greater than, or equal to, the amounts recorded using the amortization method.

Table1: MSR Impairment Analysis

Risk Strata	Note Rate Strata	Principal Balance	# Loans	Prev. Quarter Basis	New Loans Basis	Write Off Basis	Movement between Strata	Beginning MSR Book Basis	MSR Amortization	Annual % Amort.	Ending MSR Basis	Market Value	Impairment	Cushion
ARM	0.00+	$96,870,279	164	$545,249	$206,254	$0	$0	$751,508	($39,732)	20%	$711,771	$705,445	(6,326)	$0
C15_0.0	0.00 - 3.49	$141,096,864	510	$815,164	$24,785	$0	$0	$839,949	($43,395)	19%	$796,554	$1,192,175	0	$395,621
C15_3.5	3.50 - 4.49	$42,008,454	170	$294,005	$19,707	$0	($0)	$313,712	($18,485)	22%	$295,228	$328,776	0	$33,548
C15_4.5	4.50+	$1,513,607	8	$7,513	$0	$0	$0	$7,513	($545)	26%	$6,968	$9,050	0	$2,082
C30_0.0	0.00 - 3.99	$767,351,154	2,239	$5,214,900	$21,626	$0	$0	$5,236,527	($168,119)	12%	$5,073,407	$8,822,494	0	$3,749,086
C30_4.0	4.00 - 4.99	$813,405,620	2,397	$7,042,658	$905,539	$0	$0	$7,948,197	($291,033)	14%	$7,657,165	$8,252,985	0	$595,820
C30_5.0	5.00+	$66,771,381	230	$688,834	$32,217	$0	($0)	$721,051	($36,720)	19%	$684,330	$529,905	(154,425)	$0
G30 4.0	4.00 - 4.99	$207,373	1	$938	$0	$0	$0	$938	($38)	15%	$899	$1,646	0	$746
J15 3.5	3.50 - 4.49	$3,422,258	4	$26,776	$5,399	$0	($0)	$32,175	($1,637)	19%	$30,538	$27,185	(3,353)	$0
J30 4.0	4.00 - 4.99	$84,727,721	105	$721,542	$68,917	$0	$0	$790,459	($31,239)	15%	$759,220	$729,215	(30,005)	$0
J30_5.0	5.00+	$0	0	$0	$0	$0	$0	$0	$0	0%	$0	$0	0	$0
TOTALS		$2,017,369,712	5,828	$15,357,579	$1,284,445	$0	$0	$16,642,024	($625,945)	14%	$16,016,079	$20,598,875	(194,109)	$4,776,905

Source: *Mortgage Industry Advisory Corporation*

Fair Value Measurement Method

To avoid confusion, for accounting purposes, whether choosing the Amortization Method or Fair Value Measurement Method, the initial valuation and recording, plus all future reaffirmation of MSR asset values, should be valued at "Fair Value". The difference between measurement methods is how changes in asset value are recorded. If choosing the fair value method to account for MSRs, the MSRs are measured at fair value each reporting period. The changes in fair value are recorded to earnings in the period in which the fair value changes occur. Similar to the amortization method, MSRs are evaluated periodically to determine that capitalized Accounting for Mortgage Servicing Rights amounts are not over or under valued, but are consistent with current fair market. Any change in fair value is recorded directly to the MSR asset under the fair value method without the need for a valuation allowance. While the Fair Value Measurement Method can be less burdensome on a firm's accounting staff, the fair value method will undoubtedly create additional volatility compared to

Aside from the positive administrate aspects, this can be especially advantageous in a rising rate environment due to a firm's ability to recognize the gains associated with any increases in fair market values. Once the fair value method is elected, a company cannot change to the amortization method.

For illustration, what follows is a simplified monthly income statement for a $200,000 loan the month after it is sold. The servicing fee is 25 basis points, the ancillary income is $20.00 per year, the monthly value of the escrow float is estimated to be $1.33 (average escrow balance of $1,600 at 1.00 percent interest), and the servicing costs are $125 per loan. For the sake of illustration, the servicing asset is being amortized under the straight line amortization methodology.

Servicing income	41.67	(200,000*.0025/12)
Amortization expense	(30.34)	
Ancillary income	1.67	(20/12)
Value of escrows	1.33	(1,600*.01/12)
Servicing costs	(10.42)	(-125/12)
	3.91	

Hedging MSRs

With any fair market asset comes the potential need to hedge what can be a very volatile asset depending on prevailing market conditions. The most effective hedging strategy is to first understand your risk exposure. All too often, firms may not understand the full impact of the changing rate environment, and/or have policies and procedures inadequately covering their MSR Risk Exposure. Once a firm has a quantitative measurement of their risk exposure, the next step is to find the right balance, with a variety of derivatives, to offset the duration, convexity, basis and overall volatility risk. For example, TBAs help to offset duration, but adding additional negative convexity to an already negatively convex asset, can sometimes be too much. Mixing in interest rate swaps will help to offset the negative duration but will have no effect on any basis or Vega risk. Interest Rate Swaptions will provide positive GAMA and Vega, but options can be costly if not properly managed. That's where specialized models overseen by experienced personnel and/or outside expertise may be necessary.

When deciding on and implementing any hedging strategy (other than a sole reliance on natural hedging), it is important to utilize the same term structure model and prepayment model to ensure the highest correlation. Also, utilizing a retrospective or attribution reporting to decompose the risk and hedge effectiveness is key. With any negatively convex asset, coupled with existing rate volatility, it's important that one constantly monitor performance to make sure that when rates rise, your firm is not completely squeezed out of all value. Last but not least, hedges may be a costly decision, so before embarking on any risk mitigation strategy, seeking out expert advice can pay dividends.

Pros and Cons of Owning Mortgage Servicing Rights

Before making the decision to own or sell MSRs, it is important to understand how the decision may affect both long and short term earnings. For starters, it is paramount to have a firm understanding of the degree of convexity given current positioning on the "S Curve". For instance, the lower the note rate relative to current market, changes in market value may become de minimus. Alternatively put, MSR values can hit what may be referred to as a "Glass Ceiling". Once a portfolio of MSRs note rate is already below current market rates, the incentive to refinance is relatively unchanged between, for instance, 100 basis points and 200 basis points below current market. At that point on the curve, significant upside to MSR value may be attributed to changes in economic earnings rates, and even that may be minimized depending on the remittance structure. Should primary mortgage rates rise, your firm's upside may be near a point at which additional upside gain in MSR value is limited. For those looking to sell at or near market high's, whether strategic or need based, they may choose to take advantage of their current position by selling a portion of all their MSR holdings.

Also on the list of considerations is accounting treatment. GAAP requires all MSRs to be initially booked at Fair Market Value ("FMV"). However, firms can choose to maintain FMV on the asset, or use Lower of Cost or Market ("LOCOM") in subsequent reporting periods. The majority of mortgage firms over the last several years chose to maintain their MSRs on a LOCOM basis. While LOCOM has numerous benefits to those looking to minimize the impact of volatility, one downside is the inability to write the MSR asset value above its existing amortized book basis. A rapid ascent in MSR values may leave many firms unable to take short term advantage of recognizing the upside in value. The quickest and easiest way to recognize the spread between current LOCOM book basis and Fair Market Value is to sell the existing MSRs. As a reminder, firms cannot toggle back and forth between LOCOM and Fair Value accounting treatment, so if there is any hesitation toward migration to Fair Value accounting treatment, selling all or a portion of a firm's existing MSR portfolio may be the preferred route.

Anyone retaining MSRs today may be subject to changes in the regulatory environment, including but not limited to Basel III, Qualified Mortgage, and Qualified Residential Mortgage. While regulation is often born for the right reasons, the inevitable side effect is almost always increased servicing costs. The already thin margins makes potential increases to servicing difficult to handle for everyone except those with the most preferential economies of scale. Strategic transactions designed to limit one's exposure to the increased regulatory cost may serve to minimize a firm's exposure.

When taking into consideration the required accounting treatment, the potential need for impairment testing, amortization, and possible risk volatility mitigation, managing the MSR asset can be complex even for those with sufficient resources. While delegating those responsibilities to a third party is a valid option, others not wanting to manage the complexity of this asset may decide that a sell strategy is in their best interest.

Cons

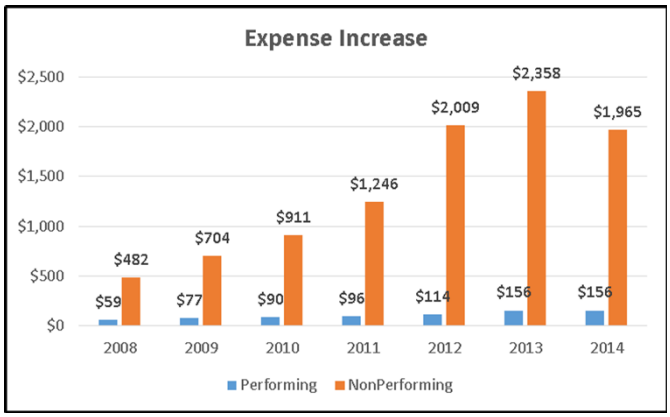
Selling MSRs today may jeopardize future earnings particularly in a rising rate scenario. As rates rise, the expected life of the MSR asset increases, which can provide a natural hedge during times of decreased originations. Firms may hold the asset to pay off before maturity, or as is oftentimes the case, firms may treat their MSR portfolio as a "Piggy Bank" and only sell on an as-needed basis to accomplish quarterly earnings. Either way, selling MSRs today may mean forgoing potential future revenue streams.

Servicing MSRs can be complex and expensive and may represent significant opportunity cost. Even so, firms may choose a long term retention strategy solely because they don't want to pass their customer's to competing firms who may leverage the seller's client base for cross-sell or recapture opportunities. For those lacking in products, infrastructure, or the resources to cross-sell, selling may be a wise decision. For others, retaining potentially low margin MSRs may be the best long term decision considering prospective opportunities afforded by a retention strategy.

What Constitutes Fair Market Value

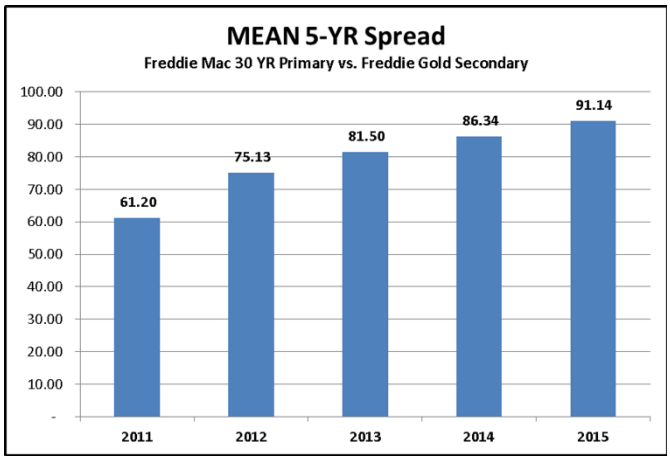
For the long term viability of the mortgage servicing market, it is essential that the regulatory bodies governing this industry strive for greater harmonization if for no other reason than reducing the cost of compliance. For example, in response to rising compliance costs (see Table 2) and decreased servicing values, originators systemically increase margins (see Table 3) by passing higher costs onto the consumer in the form of higher rates which result in improved trading gains.

Table 2: Expense Increase



Source: *Mortgage Bankers Association*

Table 3: Freddie Mac 30 YR Primary vs. Freddie Gold Secondary



Source: *Mortgage Industry Advisory Corporation*

This begs the question, what should be included in a "Fair Market Value" once buyers start paying up for the opportunity to acquire and "Churn" a portfolio. Clearly this strategy only works in a falling rate

environment in which borrowers have the incentive to refinance their mortgage. However, with unprecedented market events, instability in the credit markets, and unpredictable global economies, the incentive to refinance ebbs and flows. As change becomes the new normal, the debate over fair market accounting has intensified. This discussion highlights the need for consistent fair value measurements, not just on a national level but globally. Fair value guidance is a principles-based global framework that, with few exceptions, impacts all fair value measurements in a reporting entity's financial statements. Yet, more frequently, buyers are paying higher execution prices for legacy portfolios based on their ability to refinance or churn post acquisition. While historically taboo to churn your own portfolio, firms with preferential origination expense may find it financially advantageous to target higher Note Rate portfolios for acquisition, pay a price that partially reflects the economic benefit of the recapture, and refinance as many borrowers as economically feasible. While fair value accounting guidance is clear that firms not incorporate recapture benefits when determining fair value, it's also incumbent on modelers to benchmark to observed trades. If observed trades reflect prices that are inclusive of recapture, then in principal, the market "at times" may in fact recognize recapture as part of a "Fair Market Value". From a long time modeler's viewpoint, "Fair Value", while varied in its interpretation, should reflect value that is accessible to all. To clarify, "Cross-Sell" is not accessible to all, but the ability to refinance a borrower into a lower note rate is more readily accessible and may generate sizeable trading gains due to unprecedented Primary/Secondary spreads, not to mention a higher MSR value on the newly refinanced asset. Aside from the potential economic benefit to the borrower and lender, the perceived motivation is the underlying thought that if "We" as a firm don't target our own customers for refinance then one of our competitors will.

Not all Fair Market Values are created equal. So what does that mean? When valuing MSRs do not fall prey to benchmarking your firms MSR value(s) to another "larger" firm, or better yet, observed transactions with more preferential economies of scale. Simply put, due to Economies of Scale, buyers tend to "Pay Up" for larger MSR portfolios, and to further compound the issue, at times, the market can be very spotty for smaller residential offerings of less than $500 million in unpaid principal balance. Buyers with more preferential economies will sometimes pass a portion of their economic benefit onto the seller in the form of bid prices that reflect their preferential economies of scale. The problem with that assumption is that larger firms, in pursuit of even more preferential economies of scale, tend to be attracted to larger swaths of servicing. Simply put, it can be as much work contractually to acquire a small portfolio as a larger one, and assuming a buyer has the capital and bandwidth to pursue larger portfolios, then smaller offerings often get overlooked by the largest servicers. Either way, smaller packages will almost always be subject to a liquidity premium in the form of higher discount rates and higher cost to service. In most but not all instances, the lower trading levels often encountered on smaller offerings are in direct relation to less preferential economies of scale among the pool of buyers that may have interest in acquiring smaller MSR offerings. Of course larger firms interested in smaller acquisition targets may do so in pursuit of wider margins as smaller offerings can sometimes trade anywhere from one-half to a full multiple lower than what a larger portfolio of equal product might transact.

Additionally, buyers can be enticed to bid on certain portfolios at a lower "marginal" cost due to the possibility that no additional employees will be needed to incrementally perform the servicing function. For instance, an additional "one" billion in principal balance associated with the MSR assets being acquired may reduce a firms total "Per Unit" cost to service, assuming no additional employees are need to perform the servicing function.

As previously mentioned, comparable trades are by far the best benchmark, but due to NDA's, discovery

of actual bid levels can be difficult to obtain. Other benchmarks may include surveys, but even reputable surveys may lack sufficient coverage of your unique portfolio characteristics, such as borrower credit profile. As such, having access to Generic Servicing Assets "GSA's" may be beneficial to a firms benchmarking efforts. GSA's cover a broad spectrum of the outstanding mortgage population and are benchmarked to actual transactions. Where there are large outstanding cohorts of mortgage servicing rights, a GSA is created. The GSA attributes are the aggregated attributes from the actual underlying loan collateral at the product type, coupon, and vintage year cohort level. The loan and collateral attributes of the GSA's change annually so that the daily price changes are attributable to market factors only and not portfolio composition changes.

In the category of Fair Market Value Measurement and Disclosures, a common mistake made by many in this industry is not providing or incorporating significant data that could have a meaningful impact on the underlying value of the MSR, as described in FASB Accounting Standards Update, "Fair Value Measurement (Topic ASC 820)", Financial Accounting Standards Board, July 2013.

III. ASC 820-10-50-2 (E): THIS THIRD REQUIREMENT PRESCRIBES A GREATER LEVEL OF DISCLOSURE REGARDING THE VALUATION OF LEVEL 3 ASSETS.

For fair value measurements categorized within Level 3 of the fair value hierarchy, a reporting entity shall provide quantitative information about the significant unobservable inputs used in the fair value measurement. A reporting entity is not required to create quantitative information to comply with this disclosure requirement if quantitative unobservable inputs are not developed by the reporting entity when measuring fair value (for example, when a reporting entity uses prices from prior transactions or third-party pricing information without adjustment). However, when providing this disclosure, ***"a reporting entity cannot ignore quantitative unobservable inputs that are significant to the fair value measurement and are reasonably available to the reporting entity."***

The key aspect of this disclosure is highlighted and coincidently, where, if not careful, mistakes are commonly made when valuing MSRs. A prime example might be when a firm or individual assigns a value to certain FHA MSRs while failing to recognize that within that group of MSRs there are Streamline loans, USDA loans, or 203k loans which per market benchmarks can trade at a discount. While this is only one of many examples, if you believe that your firm may be guilty, an extensive data audit review may be warranted, and actually should be received as a welcome gesture by your auditors.

Understanding One's True Economic Value Before Buying or Selling

As someone who has been in the Mortgage business for close to 25 years, I have long been a fan of opportunistic buying and selling. Before embarking on any acquisition or sale strategy, however, it is incumbent that firms have a well-founded understanding of their true retention value before deciding on any key business strategies. For understandable reasons, FASB requires a firm hold their MSR assets on their books at Mark-to-Market levels but firms should not be overly complacent in assuming that their Fair Market and long term retention values are one and the same. For instance, how frequently do you evaluate your firm's true cost to service? Given the complexity in determining one's true cost, firms regularly fail to recognize whether they have an economic advantage or disadvantage relative to their industry peers. This can hold true even if your firm happens to use a specialty subservicer. For example, a subservicer may charge a very fair rate of $6.50 per loan per month or $78 per annum but that may not include other one-time or ongoing fees such as Tax Service Fees, Private Label Subservicing fees or even something as simple as 0.90 cents per loan per

month in monthly billing fees. As a bank, does your firm have access to lower cost of funds than what a non-bank might recognize? For those using subservicers, who is the beneficiary of late fees and other ancillary revenue? Does your subservicer contractually retain 50% of all ancillary and late fee revenue? Do you manage your own custodial funds and if not, who ends up being the beneficiary of any potential float revenue? Other considerations may include:

1. Knowing your prepay history relative to national average or,
2. Identifying what your historical recapture rate is or,
3. Being able to recognize your historical "average gain on sale" on top of an overall awareness of any value spread between the original and newly refinanced MSR, or,
4. What cross-sell capabilities (if any) does my firm have?

After discerning your true economic benefit relative to "Fair Market", you might decide that you have an economic advantage or disadvantage that you may incorporate into your business strategy.

Bulk Execution Options

One method of liquidating MSRs may come in the form of bulk transactions. While market conditions tend to dictate the amount of supply and demand, at some price, sellers can generally count on some level of market appetite for bulk offerings. As mentioned before, if surveyed, no two servicers will have an identical cost structure, and the same holds true of "Bulk" MSR offerings. No two portfolios are identical which fundamentally affects how or if a particular offering executes in the fair market. It almost goes without saying that sellers want to sell at the highest price possible and buyers want buy at the lowest price possible. After 20 plus years of buying, selling, and brokering MSR Bulk transactions, nothing holds truer than this. All deals, no matter the circumstance, must be a Win/Win situation for both buyer and seller alike, otherwise it's unlikely that a transaction will get consummated. For that very reason, when brokering, buying, or selling MSRs, price expectations must be "Fair" for all parties involved. Occasionally, when deals don't trade, possible causes may be that the offered prices are less then what the seller internally has those MSR assets on their books, or perhaps the sellers expectations are consistent with how a larger portfolio might transact. What I mean is that larger transactions (usually categorized by $1 billion and higher) can execute at a premium to smaller offerings mainly due to economies of scale. Larger buyers will often seek out higher notional amounts largely because the smaller portfolios may lack the needed scale to justify the operational time necessary to effectuate a transaction. As such, the market for smaller transactions (usually categorized by less than $500 million) may sometimes attract fewer bidders and will generally trade at a higher Cost to Service to compensate for reduced economies of scale and a higher discount rate or OAS. This may account for reduced liquidity and entice larger servicers, who may still bid based on their ability, to earn wider margins.

While not all rejoice in the idea of paying a third party to broker a portfolio of MSRs, it can be money well spent. For example, knowing the nuances of how portfolios trade and what buyers are looking for can significantly increase not only the number of interested buyers but ultimately the execution level. Case in point, it may be possible to entice more or larger buyers by limiting the number of investors in any given transaction. Larger buyers may also be interested in a "Flow" trailer, meaning a firm sells a bulk portfolio to be followed by a best efforts dollar amount to be delivered on a monthly or quarterly basis for a contractual period of time following the initial bulk transaction. It's also critical that buyers and sellers alike be well versed in what is and what is not acceptable when negotiating purchase and sale agreements. For instance, a typical Rep and Warrants may nullify a seller's ability to obtain sale treatment. To avoid scenarios like that, at MIAC I personally review every single Purchase and Sale

agreement word by word to make sure both buyer and seller are fairly represented. This oversight can protect the seller's best interest and can ensure buyers that their contractual terms are not only competitive but also representative of "Fair Market". After all, who sees more Letters of Intent then a firm that is accustomed to regularly brokering MSR portfolios? Last but not least, buyers and sellers alike can sometimes benefit from the support that a professional broker might supply. For instance, a sample timeline for a Bulk MSR Servicing Transaction may look something like this:

Stage One

1. MIAC will consult directly with Seller to evaluate business strategy.
2. Seller provides tape to MIAC for initial review.
    - Pending initial review MIAC may request additional data that may lend support to a stronger execution.
3. If applicable, MIAC produces sale select that best supports Seller's business strategy.
    - MIAC begins preliminary discussions with known Buyers for similar product. The goal is to produce a select that first and foremost captures the Seller's requirements yet also invokes buyer interest.
4. Pending Seller's approval, MIAC prepares the sale offering.

Depending on the complexity of the proposed transaction, Stage One can take approximately 2 weeks from initial consultation to finalization of the sale offering.

Stage Two

1. Offering is presented to mass market and/or known potential Buyers.
2. Offering date is negotiable but will typically be 7-10 business days from initial offer date.
3. Buyer submits LOI (Letter of Intent) with a 24 to 48 hour acceptance period.
4. Seller either accepts, rejects, or attempts to further negotiate proposed purchase price. Negotiation can add 24 to 48 hours and MIAC will assist in those negotiation efforts.

Stage Two with an interested Buyer can last 2-3 weeks before final LOI is signed. More distressed deals can take longer depending on the Buyer's level of expertise.

Stage Three

1. Upon execution of the LOI, Seller submits the necessary investor(s) form requesting transfer approval. For FNMA the application form number is 629. For Freddie Mac the application form number is 981. It is prudent to submit early due to a 60-day investor approval time frame.
2. Pending a satisfactory review of Seller's financials and loan files, the Buyer submits a Purchase and Sale (P&S) Agreement for Seller execution. The LOI should have contained all financial related data and both Buyer and Seller must agree on all other sale related items and timelines.
3. In addition to a review of the Seller's financial stability, the Buyer will most likely perform either an on-site or off-site due diligence review of a predetermined sample of the sale portfolio.
4. Pending successful execution of P&S agreement the Seller can expect to receive 70% to 90% of the sale proceeds on the agreed upon sale date.

Buyer and Seller should plan on a Stage Three timeline of approximately 45 days from the initial signing of the LOI to final execution of the P&S agreement.

Stage Four

The final stage includes transfer of the servicing and loan files and is governed by predetermined transfer guidelines between Buyer and Seller. Depending on the terms of the deal, a separate subservicing agreement between Buyer and Seller should fully address the obligations of both parties to cover the time period between sale and transfer date. It is entirely up to the Buyer and Seller regarding the time delay between sale and transfer date. The one caveat is that any purchase, sale, and transfer agreement must receive agency or investor approval and must allow for certain bylaws which mandate that borrowers be notified 15 days in advance of the pending transfer.

A typical timeframe between sale and transfer date can be 60 to 90 days but can vary in either direction depending on the requirements of both Buyer and Seller.

An alternative option to Bulk Transactions may be a "Best Efforts" Non-Bifurcated Co-Issue deal which in recent years has grown in popularity among both buyers and sellers. To clarify, Non-Bifurcation refers to Seller reps and warrants which, as part of the transaction, are conveyed to the Buyer. The Non-Bifurcated Co-Issue market can be very strong with largest offerings resulting in executed transactions at attractive levels. As enticement for buyers of mostly larger MSR Bulk offerings, some flow deals are being consummated as part of, or immediately following, an initial bulk offering which on its own may be too small to attract the pool of buyers with the most preferential economies of scale. Not dissimilar from MSR Bulk offerings, large buyers often seek out larger commitments of at least $50 million per month, and preferably larger, but, thankfully, sellers continue to benefit from the ever increasing number of Non-Bifurcated Co-Issue buyers. Co-Issue flow has proven to be a valuable option for cash motivated sellers seeking to maximize their gain without the hassle of long term MSR ownership. While some buyers have tightened up their acquisition guidelines and now seek out sellers with higher Net Worth and higher volume commitments, opportunities still exist for most. Co-Issue flow can also be a lucrative option for buyers and sellers seeking longer term partnerships, not to mention the "co-issue" program assists with cash and capital management by monetizing MSR upfront while still providing the benefits of direct delivery.

Other Benefits to **Non-Bifurcated Co-Issue** can include:

- Direct Sale to GSE
- Speed of Settlement
- Absence of Aggregator Overlays
- Pricing Stability – MSR grids are static for 30 or more days with periodic Par Note Rate Adjustments
- Operational Efficiency
- Co-Issue Execution is frequently the outright Best Execution, and is often a compelling alternative to Aggregator Released or GSE Retained execution
- Simultaneous Transfer
- Seller assigns servicing to MSR Buyer during delivery to GSE
- Seller reps and warrants transfer to MSR Buyer ("non-bifurcated")
- Seller usually avoids boarding MSR to servicing system or sub-servicer
- Simple, straightforward deliver/settlement process with MSR Buyer

Whether engaging in Bulk or Co-Issue executions, extensive experience in pre-market analysis, Best Execution loan sale selection, bid preparation, and closing are key elements of any successful transaction. Thorough knowledge of mortgage products, coupled with expertise in collateral behavior, will ensure that execution prices are "Fair". It is also reasonable to say that aggressive marketing of each portfolio can create a more competitive pricing environment. Last but not least, intimate knowledge Mortgage Loan Purchase and Sale Agreements, complemented with excellent negotiation skills, will ensure that both buyers and sellers alike have as seamless transaction as possible. If you feel your firm needs support in any of the aforementioned categories, professional support is highly encouraged.

Mike Carnes, *Director, Capital Markets Group*

Choosing a Hedge Vendor and Preparing for Hedging

Macro Considerations

At a high level, considerations for how to choose **1) a pipeline hedging vendor** and **2) the type of engagement with a hedge advisor**, are dependent on characteristics of the lending institution, including:

- **Type of institution:** i.e. independent mortgage banker, depository
- **Evolutionary stage of the firm**: BE to Mandatory conversion? Becoming an agency direct seller? Shifting from portfolio lending to mortgage banking?
- **Staffing**: availability/cost of experience/expertise in Pipeline risk management, mandatory delivery, TBA trading.

These macro considerations help narrow the field of hedge advisors to be assessed. The answers to the three questions above will guide the firm to an appropriate place on the spectrum of engagement styles – with Full Service at one end, and Self Service at the other.

For example, an independent mortgage banker converting from Best Efforts to Mandatory with no experience in pipeline hedging would gravitate toward Full Service (at least to get started). In the case of most independent mortgage companies, the firm's founding owners and majority partners are likely to have their roots in loan production, not in the secondary market or capital markets. Their expertise lies in making loans, not managing risk in the secondary market, which is a discipline unto its own.

By way of contrast, a regional bank selling directly to the GSE's, retaining servicing, and looking to upgrade their risk management from a legacy spreadsheet approach, would lean toward a Self-Serve engagement, likely involving software licensing.

Alternatively, depositories (banks, credit unions), independent mortgage bankers typically have a narrower set of concerns and less demanding external counter-parties to satisfy, so the pool of acceptable hedge advisors is broader. A more complex regulatory environment guides depositories toward the top tier of vendors that meet more stringent compliance requirements, especially around model validation, disaster recovery, and data security (SOX, GLB, Dodd-Frank).

The upper echelon of hedge advisors is also characterized by true intellectual property embedded in the financial modeling that is the basis for licensable software. Because of the human element involved in risk management, there is as much art to pipeline hedging as there is science. The formal coding of these models into software doesn't mean that the hedging results will automatically be better. However, in the right hands, better technology does enable a higher return on investment for the user.

Among the individual hedging vendors, the differences run from the structural to the technical. Several hedging vendors may be viewed as mono-line hedge advisors. They occupy one end of the spectrum of engagement, emphasizing high-touch, full-service hedge advisory services. This makes them popular with smaller and/or less sophisticated firms moving from Best Efforts to Mandatory.

Another set of hedging vendors occupies the self-service end of the spectrum, offering software for DIY'ers who don't need or want any advisory component to the engagement. This makes them popular with large institutions that have robust staffing, experience, and resources to manage every aspect of the discipline.

A third set of hedge vendors is positioned to operate at both ends of the spectrum (and many points in between) providing a flexible engagement that enables the user to tailor the engagement to fit their evolving infrastructure.

Micro Considerations

Beyond these structural differences there are significant technical distinctions that further stratify the field of hedge vendors.

Within the field of pipeline risk management and hedge analytics, there's an "Old School" and a "New School".

The Old School methodology is characterized by any or all of the following:

1. Excel or Access database underpinnings
2. Pipeline MTM based on proxy pricing from the TBA market
3. Pipeline coverage weighted ONLY for Pull-Through
4. One-dimensional fallout analysis, and/or Pull-Through model
5. Definition of Flat means achieving a Zero Net Position
6. Absent or simplistic shock reports
7. Shock reports that demonstrate perfect symmetry between the Gain/Loss on the loans and Gain/Loss on the Hedges.
8. Sensitivity analytics that exclude duration and convexity of MSR component

The Old School methodology is also marked by the absence of a disciplined accounting for all of the risks to the embedded value of the pipeline. The Old School does not:

1. Measure "value at risk" from DAY 1 of the locked position via a client specific, daily loan-level best execution
2. Measure price/value sensitivity through an accurate and market-validated calculation of durations and convexity at the loan level and hedge instrument level
3. Measure and shock the MSR value or SRP component of the pipeline

Firms using the Old School method are at risk of being blind-sided, thinking they are covered appropriately, but are misled into believing that they were flat, or even long. In reality, they are short to begin with and become significantly shorter really fast in a big rally.

When the market eventually sells off, and it may do so violently, the Old School adherents and their clients, are likely to over-react by adding too much coverage in inappropriate coupons in an attempt to cover for an anticipated increase in pull-through. They will once again have their guard down, thinking they are covered properly, when in fact they are set up to get blind-sided again.

The absence of a dynamic risk model that integrates pull-through, durations, and MSR/SRP sensitivity is analogous to an NFL front line that is missing a Right and Left Tackle, leaving the quarterback exposed to a blind-side blitz.

The New School methodology has the blind side covered.

The New School perspective holds that adherents of the Old School are not measuring everything that they should, so their reports distort the reality of the client's position. Old School analytics/reports may show that the client went into a particular market event with a flat (or even long) position, but if measured properly, they will typically be over-hedged by 10 to 20%. To make matters worse, the coupons they are hedged with are typically the most sensitive to changes in the market.

The "New School" of pipeline risk and hedge analytics addresses the blind spots inherent in the Old School approach. Here is how to cover the "Old School Blind Spots":

1. Run daily loan-level best execution from Day 1 of the lock position based on the client's specific risk profile and AOT contract terms
2. Perform loan-level sensitivity analysis on the MSR component in the loans and AOT contracts to accurately measure all pipeline and market risks
3. Calculate durations at the loan-level and hedge instrument level to calibrate the hedge on a duration weighted basis and hedge to the client's actual execution

4. Deliver integrated best-execution and hedge analytics in one exercise to measure all exposures and optimize the position

Preparations

For most firms, migrating from a Best Efforts execution to a Mandatory execution represents an evolutionary step into a different business model. This entails a much deeper investment in the business, and often an organizational shift. The most significant shifts that occur in the transition from Best Efforts to Mandatory include:

1. Fallout Risk
2. Market Risk
3. Pricing/Basis Risk
4. Fair Value Accounting
5. Settlement Cash Flow

In order for the firm to succeed in the transition, and to achieve an attractive return on that investment, there are changes to the firm's infrastructure that should be made, areas of expertise that probably need to be acquired, and new relationships that need to be established across the entire platform.

1. **IT and Systems Infrastructure**: Some legacy systems supporting the firm in its Best Efforts days may be inadequate to efficiently support the additional complexity of the secondary marketing and risk management activities under mandatory execution.

    a. *Pricing and Eligibility (PPE):* At the outset of the transition to mandatory, firms will continue to use Best Efforts as the basis for their "street pricing" (that distributed to production units). As a result, most, if not all of the PPE's in the market are adequate. Later in the firm's evolution, they may consider shifting their pricing basis to mandatory (aggregator or agency) in order to get greater control over margins and provide a more stable price to the field. The firm will need a PPE that supports management of an upload from the firm for pricing distribution.

    b. *LOS [Loan Originating System]:* From the outset of the transition to mandatory, the firm will need to have an LOS that can be configured to capture and retain data relating to mandatory investor commitments, and purchase advice data in addition to the best efforts pricing for the loan.

        This is necessary to facilitate the measurement of the additional gain-on-sale attributable to the mandatory execution. The LOS will also need to be configured to manage the "one-to-many" dynamics of investor commitments to allow for allocation of multiple loans to single investor commitment, as opposed to the "one-to-one" relationship in a Best Efforts execution.

    c. *Accounting/GL*: Best Efforts commitments are technically considered a derivative hedging instrument. However, most independent mortgage banking firms don't recognize this in their accounting methodology because each loan is mated to an individual investor commitment from the date of lock through investor settlement. Under mandatory execution involving the use of TBA MBS as the hedge instruments, their accounting systems need to be configured to support Fair Value accounting. This includes the separate recording of a month end Mark-To-Market on the parts of the position that are floating with the market (locked loans, uncommitted closed loans, and active hedge instruments), and these entries need to be made at the most granular level.

d. *Servicing*: Currently, and for the foreseeable future, most firms who are transitioning into mandatory execution will defer (either voluntarily or involuntarily) to a transition into a servicing retention model for at least a year. If and when they do begin selling direct to the GSE's, most will opt to outsource the servicing to a sub-servicer, at least until they have achieved significant scale. Some depositories may have legacy loan servicing systems that are engineered for a wide range of consumer loan servicing. These systems may suffice for a small scale effort, but will be challenged to efficiently service a mortgage servicing portfolio of a statistically relevant size.

2. **Organization/Culture**: A common situation for independent mortgage bankers is for the culture of the firm to be singularly focused on loan production and have vested a great deal of control and power in the production units. That's another way of saying that loan officers rule the roost and are used to getting their way. When the firm is in Best Efforts mode, the scope of a loan officer's role tends to include activities that are (or should be) in the domain of secondary marketing: choosing investors for lock commitments, managing pricing extensions, renegotiations and re-locks. It's also common for branches to be empowered to broker loans out to wholesale investors.

   The transition to mandatory requires a formal, disciplined, and centralized approach to all of these functions. Shifting those activities away from the production units and empowering the secondary marketing unit often requires some negotiation to make the production units feel that they are getting more than they are giving. Firms may offer to share some of the improvement in secondary market execution as the salvo, but they need to emphasize the need for the secondary marketing unit to control lock policies and procedures in order to mitigate the risks that could transfer to the firm under a mandatory execution.

3. **Mandatory Approval**: The firm will need to approach its existing stable of investors and make a formal application for inclusion in their mandatory execution program. For the investor, this is likely a sad moment, as they stand to suffer a reduction in the margins they are making on the business they are buying from the firm. Typically, the approval should come within 30 days in the context of an existing relationship. In some cases, the investor will throw up a few road blocks to slow down the transition so they can continue to experience the wider margins for a little while longer. However, once the firm has made their intentions clear, the investor will have little choice but to approve the firm for mandatory execution if they want to continue to do business with the firm. For some firms, legacy performance issues with dormant investor relationships could preclude getting approved until those issues have been cleared through a negotiated settlement. These are highly situational, and the choice to settle in order to move forward will depend on the position of the investor in the market, the firm's need for that investor's execution, and how long it will take to recoup the firm's "investment" in that relationship.

4. **Warehouse Financing**: For some independent mortgage firms, legacy warehouse lenders may not support the mechanics of secondary marketing under a mandatory execution. Smaller mortgage bankers using local banking relationships to fund their pipelines may find that the relationship is not structured as a commercial line of credit. In these cases, the facility may be structured as "repo" where the warehouse lender actually takes possession of the loan at closing which disrupts the hedging, accounting, and mechanics of the mandatory execution. In these cases, the warehouse lender requires a "clear to close" from an investor

before they will fund the loan. This works fine for a Best-Efforts execution where the firm is not authorized for delegated underwriting. However, the flexibility required for mandatory execution with delegated underwriting, means the firm will need to establish one or more relationships with other lenders whose warehouse facilities are properly structured. The terms of the financing will primarily be a function of the counterparty's financials, profitability, liquidity, experience, reputation, and track record in the business. The firm will be required to meet certain covenants related to its financials (especially liquidity) in order to continue the relationship.

5. **External Auditors**: It is common for firms to be engaged with external auditors who are in close geographic proximity, and are accounting generalists. Usually, these auditors have little or no experience with the nuances of Fair Value accounting that the firm will be faced with as it evolves into mandatory execution. This is often the case with firms who have evolved from broker to banker, or community and regional banks who are migrating from mortgage lending to mortgage banking. Usually, the firm will need to establish a relationship with an accounting firm that has developed expertise in Fair Value accounting, preferably for mortgage servicing rights as well as for the hedged pipeline. Currently there are several regional firms who are mono-line specialists in Fair Value accounting, as well national accounting firms that have units dedicated to this practice.

6. **Broker/Dealers**: Firms who expect to hedge their mandatory positions using TBA Mortgage Backed Securities must establish relationships with SEC registered broker/dealers who can facilitate the efficient trading of these hedge instruments. Currently, there are several broker/dealers who specialize in this activity and who are focused on supporting independent mortgage bankers and smaller depositories with tangible net worth below $50 million. These "intermediary" broker/dealers cover their trading activity with the "primary" dealer community, which is comprised of large institutional broker/dealers with trading desks that may span many different fixed income securities beyond TBA MBS. The largest mortgage bankers and larger depositories can expect to be serviced directly by primary dealers, based on their counterparty strength and the amount of business they represent.

The terms of the firm's relationship with the broker/dealer will be a function of the firm's financials, profitability, liquidity, experience, reputation, and track record in the business, and the firm will be required to meet certain covenants related to its financials (especially liquidity) in order to continue the relationship. There are several aspects of the hedging activity that can have an impact on the firm's cash flow and cash position, and one feature of note in the broker/dealer relationship is a "margin call". This feature obligates the firm to post cash to the broker/dealer when the mark-to-market value of the open TBA securities in the firm's position declines beyond a certain point (the "threshold", which may be different for each broker/dealer), where the position is "under-collateralized". The cash is put on deposit for the benefit of the firm, and serves to reduce the amount owed by the firm to the broker/dealer at settlement across the entire position. Theoretically, the firm can ask for the cash back if and when the mark-to-market has rebounded to the point where the position is over-collateralized.

Some broker/dealers require that the firm put cash on deposit up front, to provide a cushion against adverse mark-to-market movement. This is referred to as a "Margin Account", and covers a certain amount of adverse market movement, beyond which, the firm is subject to a margin call, and must then post additional cash to maintain the collateralization of the position.

7. **Liquidity, Cash Flow:** When executing via Best-Efforts, the firm's cash management needs are based on a pretty simple one-to-one model where each loan is covered ("hedged") by a commitment with the investor, and the recognition of gain-on-sale for each loan is immediate and absolute. The firm has execution certainty (as long as the data is static and the investor continues to operate), and their major cash outlay related to secondary marketing is the haircut on the warehouse line. The haircut is then recouped when the loan is settled with the investor and the funds are wired into the warehouse lender. If the loan doesn't close (or the firm sells the loan elsewhere), the investor who provided the Best-Efforts commitment bears all the hedge costs.

When the firm transitions to Mandatory execution, the loan and the hedge are de-coupled, and the cash-flow model changes. The firm has traded execution certainty for execution flexibility, and while the price an investor pays for the loan is still certain, the ultimate gain-on-sale for each loan becomes unknowable. There may be gains on loans that are offset by losses on hedge settlements, or the inverse may be true where losses on the sale of the loan are countered by gains on the settlement of the hedges. Since no single hedge instrument applies to any single loan, the locks taken on any given day, or any particular sub-group of loans, the ultimate performance of the firm is measured at the position level over a span of time, not at the loan level.

Further complicating the situation is the fact that TBA MBS hedge instruments have specific settlement dates during the month, whereas loan settlements take place all month long. As a result, the firm may experience situations where gains from loan sales occur after payments of hedge settlements. This can result in a cash-flow mismatch as illustrated in the table below.

	Scenario 1 - Loan Settlement BEFORE Hedge Trade Settlement		Scenario 2 - Loan Settlement AFTER Hedge Trade Settlement	
	Rally	Sell-Off	Rally	Sell-Off
Notional Amount of Loans (at Cost)	$ 50,000,000	$ 50,000,000	$ 50,000,000	$ 50,000,000
Settlement Date - Loans	11/10/15	11/10/15	11/30/15	11/30/15
Original Strike Price on Loans	102.00	102.00	102.00	102.00
Final Price on Loans	104.00	100.00	104.00	100.00
Loan Settlement Amount	$ 52,000,000	$ 50,000,000	$ 52,000,000	$ 50,000,000
Loan Gain/Loss	$ 2,000,000	$ -	$ 2,000,000	$ -
Notional Amount of Hedges	$ 42,500,000	$ 42,500,000	$ 42,500,000	$ 42,500,000
Settlement Date - Hedges	11/16/15	11/16/15	11/16/15	11/16/15
Original Strike Price on Hedges	100.00	100.00	100.00	100.00
Final Price on Hedges	102.00	98.00	102.00	98.00
Hedge Settlement Amount	$ 43,350,000	$ 41,650,000	$ 43,350,000	$ 41,650,000
Hedge Gain/Loss	$ (850,000)	$ 850,000	$ (850,000)	$ 850,000
Net Gain/Loss	$ 1,150,000	$ 850,000	$ 1,150,000	$ 850,000
Cash Flow Balance at Hedge Settlement	$ 2,000,000	$ -	$ (850,000)	$ 850,000
Cash Flow Impact	Positive	Zero	Negative	Positive
Cash Flow Mismatch Days*	6	6	(14)	(14)

The firm can avoid the impact of these situations by engaging in AOT (Assignment of Trade) transactions with their loan investors. Essentially, the AOT shifts the hedge trade settlement obligation to the investor, and also provides an immediate credit to the firm's broker/dealer account. This can also help the firm deal with a margin call scenario. However, not all

investors are approved for AOT transactions with all broker/dealers, hence the need for a high level of liquidity for the firm at all times.

Simply put, Mandatory execution represents a very different and more sophisticated business model from Best-Efforts. Firms who plan to make the transition need to consider all the aspects identified above as part of their strategic plan for implementing a Mandatory execution strategy. They also need to choose the appropriate industry partners to support their efforts.

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