

# Servicing Compensation Initiative pursuant to FHFA Directive in Coordination with HUD

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## Background and Issues for Consideration

February 2011

**Disclaimer:** This presentation, compiled at the direction of the Federal Housing Finance Agency (FHFA), illustrates potential alternative servicing models and the potential estimated impact of these alternatives on servicers, originators, borrowers, guarantors, investors, the TBA market and other mortgage industry participants. The information and illustrative examples provided in this presentation are intended for discussion purposes only and are based on a number of assumptions such as IO valuation multiples, net float/ancillary values and net costs to originate; they do not reflect any decisions regarding an alternative servicing model or a guarantee of future outcomes to the extent an alternative servicing model is implemented in the future. The information and illustrative examples are not to be taken as accounting or tax advice or conclusions.

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# Introduction

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## ▪ What is the Servicing Compensation Initiative?

- FHFA is acting as Conservator for Fannie Mae and Freddie Mac (the “GSEs”), and has directed them to work with HUD, including Ginnie Mae and FHA, to consider alternatives for a better system for paying servicers of single-family loans, most of which are in mortgage-backed securities (“MBS”).
- The MBS structure for servicer compensation pays the loan servicer from a strip of the interest on each mortgage, an “IO” strip. The IO strip is a difficult asset to manage, as discussed in what follows, and results in a servicer receiving more than enough income to cover the expenses of servicing performing loans, but not enough when a portfolio includes a significant number of non-performing loans (“NPLs”).
- The goals of the initiative are to improve service for borrowers, reduce financial risk to servicers, and provide flexibility for guarantors to better manage non-performing loans, while promoting continued liquidity in the To-Be-Announced (“TBA”) mortgage securities market.

## ▪ Why are Fannie Mae, Freddie Mac, Ginnie Mae and FHA participating in the Initiative?

- Freddie Mac, Fannie Mae and Ginnie Mae are significant participants in the MBS market which generates financing for most American homes. We refer here to Fannie Mae, Freddie Mac and Ginnie Mae together as “Agencies,” although the Ginnie Mae business model has a number of important differences from the GSEs.
- Fannie Mae and Freddie Mac buy mortgages and guarantee both borrower credit and MBS performance. Ginnie Mae, a U.S. government-owned corporation, guarantees MBS pools of mortgages insured at the borrower credit level by FHA, VA and RD. Ginnie Mae does not buy mortgages and has no investment portfolio while the other Agencies do.
- FHFA and the Agencies want to ensure that the housing finance market is as robust, diverse and efficient as possible.

## ▪ How is the Initiative developing new ideas for servicing compensation?

- There have been talks in the industry for years about how to change servicing compensation and we have reviewed those ideas and present some of them in this document. FHFA is coordinating the efforts of the initiative to gather feedback from the industry, consumer groups and investors, and from other regulators and government agencies.
- *We are soliciting input from all interested parties. The participants in the Initiative are soliciting input in order to make recommendations regarding a new structure. The ideas, models and alternatives included in this presentation are used as starting places to generate thinking and to explain concerns with the current compensation system. The examples in this presentation are based on the GSE model, and examples have been simplified, in order to clarify essential points. FHFA expects that this effort will lead to a proposal for a new single-family mortgage servicing compensation model that will benefit from broad public input.*

# Stakeholders and Objectives

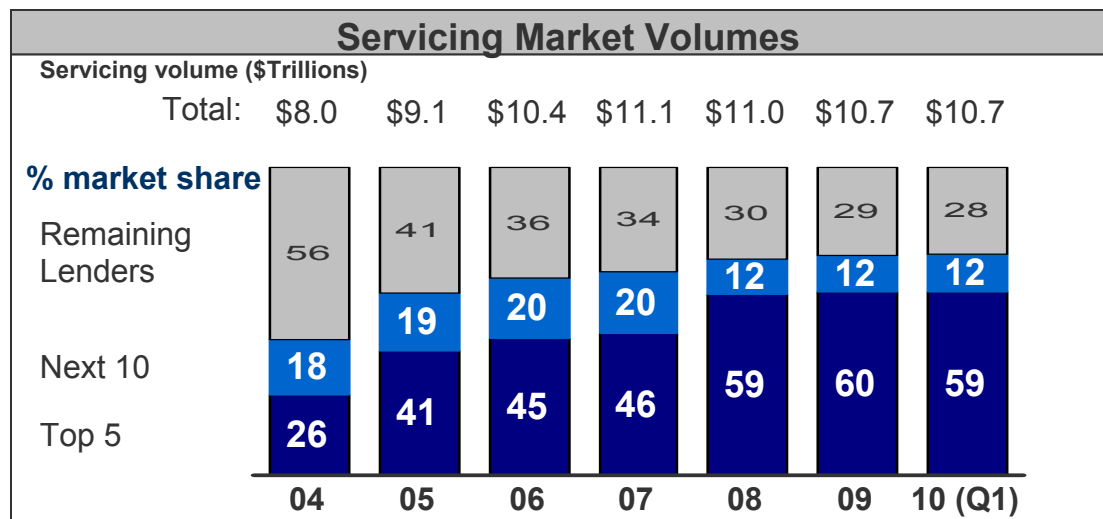
Stakeholder	Objectives
<b>Borrower</b>	<ul style="list-style-type: none"> <li>• Access to a competitive, inexpensive mortgage market</li> <li>• Maintain call option on fixed and adjustable rate mortgages</li> <li>• High service level from Originators and Servicers, including on NPLs</li> </ul>
<b>Originator</b>	<ul style="list-style-type: none"> <li>• Offer and originate profitable mortgage products</li> <li>• Origination Rep &amp; Warrant liability must be transparent and predictable</li> <li>• Minimize capital intensity</li> <li>• Maximize liquidity and reliability of secondary market</li> </ul>
<b>Servicer</b>	<ul style="list-style-type: none"> <li>• Performing Loan (PL) servicing must be profitable</li> <li>• Non-Performing Loan (NPL) servicing must be profitable</li> <li>• Minimize balance sheet volatility and capital intensity</li> <li>• Maximize liquidity and reliability of the servicing market</li> <li>• Servicing Rep &amp; Warrant Liability must be transparent and predictable</li> </ul>
<b>Borrower Credit Insurer</b>	<ul style="list-style-type: none"> <li>• Borrower credit insurance must be profitable</li> <li>• Flexibility to transfer and reallocate servicing to manage credit performance</li> </ul>
<b>MBS Guarantor</b>	<ul style="list-style-type: none"> <li>• Robust origination and servicing markets</li> <li>• Alignment of servicer-guarantor interests</li> <li>• Flexibility to transfer and reallocate servicing to assure adherence to servicing obligations</li> <li>• Robust and liquid TBA market to finance mortgage securities</li> </ul>
<b>Investor</b>	<ul style="list-style-type: none"> <li>• Maximize predictability of prepayment behavior</li> <li>• Minimize any TBA market dislocation from potential changes</li> <li>• Maximize liquidity of the TBA market</li> </ul>
<b>Regulator</b>	<ul style="list-style-type: none"> <li>• Safety and Soundness of regulated entities</li> </ul>

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## **II. CURRENT SERVICING MODEL**

# Current Origination and Servicing Markets

- **Agency loan originators have two ways to handle servicing:**
  1. Servicing Retained: Originators can sell the loan to the Agency directly, or pool loans to create an MBS, and retain the Mortgage Servicing Rights (MSRs)
  2. Servicing Released: Originators can sell the loan including the MSR to another financial institution (an aggregator) through the aggregator's correspondent window (for banks) or third party channel (brokers) and receive a mortgage servicing release premium
  
- **The servicer who owns the Mortgage Servicing Right (MSR) is responsible for:**
  1. Recording this capital-intensive MSR financial asset on their balance sheet, then performing the complex financial management required by this asset
  2. Performing the servicing functions, whether or not they actually sub-service the operations
  3. Managing all aspects of the borrower relationship
  
- **Servicing is a concentrated industry:**



Source: Inside Mortgage Finance

**Robust origination markets require robust servicing markets, as both are intricately linked through the servicing execution choices impacting the originator and servicer economics**

# Current Servicing Model Overview

## Servicing Operations (Core Competency)

### Performing Loan (PL) Activities:



### Non-Performing Loan (NPL) Activities:

- Collections
- Advance P&I (float loss)
- Workout activities
- Foreclosure activities

### Sample Servicer Direct Costs To Service (CTS) per Loan:

- Performing Loans: Mega/Large ~\$4/mo; Medium ~\$7/mo (see p. 8)
- Non-Performing Loans: >\$80/mo or >\$1,000/yr if continued delinquency

## Mortgage Servicing Right (MSR) Economics

### 1) Revenue

- **Minimum servicing fee (MSF)** generally 25 bps regardless of loan status
- **Excess servicing**: Incremental interest strip retained above MSF
- Ancillary income/late fees
- Float on principal & interest
- Net float on taxes & insurance escrow

### 2) Expense

- **Cost to service (dependent upon loan status & efficiency of servicing operations)**
- Lost float on advances for NPL loans
- Interest lost on last payment date to pay-off date

## Servicing Model Challenges

### 1) MSR Interest-Only (IO)/Prepayment Risk Exposure

- Above “adequate compensation” → capitalized MSR asset
- *High economic and accounting volatility*
- *Complex and expensive to hedge*
- *Capital-intensive (~20% today, up to 100% marginal under Basel III)*

### 2) Misaligned NPL Servicing Incentives

- **Costs on NPL servicing exceed revenues**
- Negative float on servicer advances
- Guarantor’s limited ability to transfer servicing
- **Guarantor accrues credit savings; servicer incurs CTS**

A servicer’s core competency has historically been focused on operational efficiency in performing the servicing operations. However, the current form of compensation (i.e., an Interest Only structure based on the minimum servicing fee + excess servicing) creates an MSR financial asset that requires complex financial management expertise distinct from this core competency. Additionally, the “one size fits all” fee structure results in mis-aligned servicer-guarantor incentives for non-performing loans.

# Performing Loan Costs to Service Analysis (based on MBA Survey)

## 2007\* MBA Servicing Operations Study and Forum - Prime Loan Costs to Service

Servicers	Small/ Medium	Large	Mega
<b>Annual Expenses per Loan (for both Performing and Non-Performing Loans):</b>			
<b>Default</b>	\$ 18	\$ 21	\$ 11
Customer Service	19	19	15
Servicing Systems	23	15	10
Other	47	41	19
<b>Direct Expense per Loan</b>	<b>\$ 106</b>	<b>\$ 95</b>	<b>\$ 55</b>
Average # of Loans Serviced	52,912	325,001	2,728,996

Servicers	Small/ Medium	Large	Mega
<b>Monthly Expenses per Loan (for both Performing and Non-Performing Loans):</b>			
Monthly Direct Expense per Loan (\$)	\$ 9	\$ 8	\$ 5
Annual Direct Expense per Loan (bps for \$100K loan)**	11 bps	10 bps	6 bps
Annual Direct Expense per Loan (bps for \$200K loan)**	5 bps	5 bps	3 bps

Servicers	Small/ Medium	Large	Mega
<b>Monthly Expenses per Loan (estimated Performing Loans only):</b>			
<b>Monthly Direct Expense per Loan (excl. Default)</b>	<b>\$ 7</b>	<b>\$ 6</b>	<b>\$ 4</b>
Annual Direct Expense per Loan (bps for \$100K loan)**	9 bps	7 bps	4 bps
Annual Direct Expense per Loan (bps for \$200K loan)**	4 bps	4 bps	2 bps

\* Source: Based on 2006 data; see <http://www.mortgagebankers.com/files/ServicingOperationsStudyWalsh9-07.pdf>

\*\* The bps/loan equivalent is shown for both \$100K and \$200K average loan sizes

*Note: The above analysis reflects weighted average costs per loan from the 2007 MBA Survey, reflective of the relatively low default period before the housing crisis, so the numbers are more heavily weighted to performing loan average costs. On an individual loan cost basis, the non-performing loan costs to service are significantly higher than reflected above and as indicated on the previous slide.*

Using publicly available MBA survey results, the “pre-housing crisis” direct monthly costs to service estimates for combined performing loan (PL) and non-performing loans (NPL) are:

- mega servicers ~\$5/loan
- large servicers ~\$8/loan
- small/medium servicer ~\$9/loan

However, PL servicing costs tend to be lower than NPL, benefiting from advances in technology and other economies of scale similar to electronic bill payment services.

One way to estimate PL costs to service only based on the available data would be to exclude the direct NPL default costs, resulting in **direct monthly PL costs to service of:**

- mega servicers ~\$4/loan
- large servicers ~\$6/loan
- small/medium servicer ~\$7/loan

While the results are from a 2007 “pre-housing crisis” survey, increases in costs to service since 2007 have arguably been primarily stemming from the NPL side. Recent research articles (e.g. Amherst Mortgage Insight 2/2/11 report) have provided similar PL cost estimates in today’s markets.



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## **II. ALTERNATIVE SERVICING MODELS & STYLIZED ILLUSTRATIONS**

# Alternative Servicing Compensation Models from Past Industry Discussions

- Variations of these reduced servicing fee alternatives have been discussed in the industry for years. The specific selections below are meant to be conceptual representatives to facilitate side-by-side analysis:

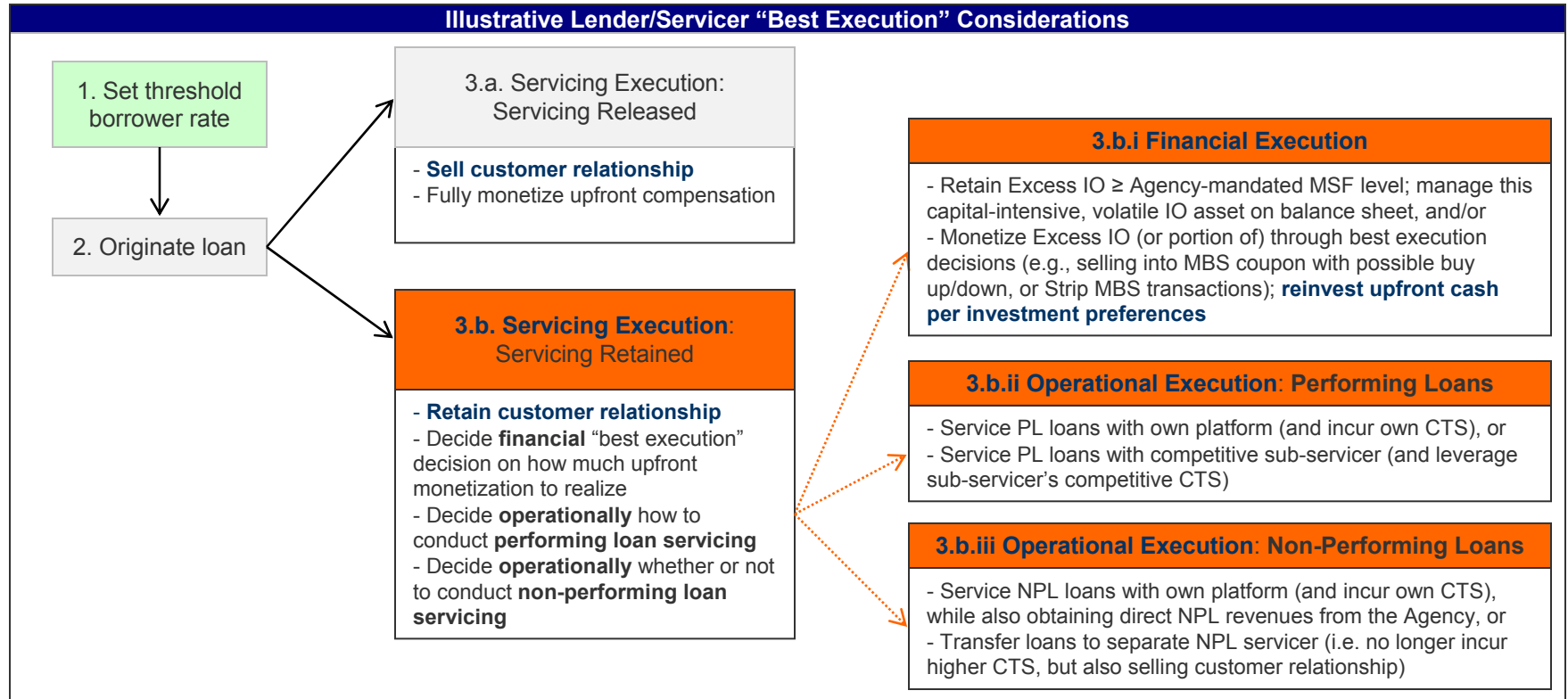
Alternative	Description (Performing Loan Compensation )	
No Minimum Servicing Fee (No MSR capitalization)	<ul style="list-style-type: none"> <li>Replaces (if MSF=0) or reduces (if MSF&gt;0) the complex MSR financial asset at origination with option to receive more upfront cash; monetization achieved through best execution decisions (i.e., delivery into the MBS coupon, buy up/down, and/or excess IO securitization)</li> <li>Servicer retains float &amp; ancillary (same as current)</li> </ul>	<ul style="list-style-type: none"> <li>MSF for performing loans reduced to 0 bps</li> <li>If combined MSF and float &amp; ancillary income deemed “adequate compensation”, does not require capitalization (note: capitalization determination TBD by the lenders*)</li> </ul>
Reduced Minimum Servicing Fee (No MSR capitalization)		<ul style="list-style-type: none"> <li>MSF for performing loans reduced to amount &gt;0 (e.g., 3 bps)</li> <li>If combined MSF and float &amp; ancillary income deemed “adequate compensation”, does not require capitalization (note: capitalization determination TBD by the lenders*)</li> </ul>
Reduced Minimum Servicing Fee (MSR capitalization)		<ul style="list-style-type: none"> <li>MSF for performing loans reduced to amount &gt;0 (e.g., 12.5 bps)</li> <li>Combined MSF and float &amp; ancillary income would likely be deemed <u>above</u> “adequate compensation”, which requires capitalization</li> </ul>
Alternative Minimum Servicing Fee (e.g., 1% P&I)		<ul style="list-style-type: none"> <li>Servicer holds 1% unguaranteed pro-rata share of loans in MBS</li> </ul>

\* Capitalization is required if ongoing servicing compensation exceeds “adequate compensation” (i.e. market based economics for a replacement servicer). This becomes more subjective when there isn’t an easily observed “market price” for performing loan replacement servicing, and could lead to divergent capitalization practices.

- Non-Performing Loan (NPL) Compensation:** Separate fee for service NPL servicing compensation financed by the guarantor where the servicer is paid market rates for performing the defined NPL servicing protocols. By construct, these fees would be “adequate compensation” while fixing the mis-aligned servicer-guarantor incentives.
- Collateral:** Any change in the MSF will also require a complementary change in collateral approaches to cover origination rep & warrants that would be bifurcated from servicing rep & warrants

# Lender/Servicer “Best Execution” Considerations under the Alternatives

- The lender/servicer determines the mortgage rate that can be offered to the borrower. Inherent in the mortgage rate offered is the required expected profit for origination & servicing, regardless of the level of the minimum servicing fee.
- After setting the borrower note rate, the lender/servicer then determines via “best execution” decisions their optimal servicing retain/release execution, financial execution, and subsequent operational execution



Some lenders may not have a choice to retain the mortgage servicing right, and can only opt for the servicing released execution. With lower capital requirements for holders of mortgage servicing rights, it would be possible for those lenders to retain servicing or sell to potentially more entrants to the servicing market. Other lenders who can already opt to retain servicing would have **increased flexibility in “best execution” decisions on the financial and operational sides.**

If the lenders who retain servicing wish to preserve their current investment profile under the current servicing compensation model, they can choose to hold Excess IO as an asset on balance sheet with its associated capital intensity and hedging requirements. Otherwise, these lenders may now choose to monetize the Excess IO (or portion thereof) and re-invest the cash proceeds into a different risk-profiled asset. Thus **reducing or eliminating the agency-mandated MSF is akin to reducing or eliminating the agency-mandated retained IO strip for a lender/servicer; it is not reducing their economics, but instead increasing their flexibility in “best execution”.**

# Stylized Illustrations: Performing Loan Compensation Models

- The following slides utilize a stylized “fact pattern” to compare the differences in the timing of cash, taxes, GAAP and capital requirements of several potential performing loan (“PL”) compensation frameworks
  - The illustrations are not meant to reflect any view on base mortgage rates but rather are used to demonstrate the originator/servicer impacts of the different frameworks in a stylized framework
- For purposes of the comparative illustrations, certain base assumptions were utilized (e.g., IO multiples, net float/ancillary values and net costs to originate) that are consistent with past industry observations. These assumptions are held constant across the various model illustrations, thus their absolute values are not important in differentiating between the relative model alternatives
  - 6.00% market mortgage rate offered under each PL servicing compensation structure
  - 4.00x valuation multiple on any interest only (“IO”) strip held or monetized (including any minimum servicing fee)
  - 28 bps valuation of the net of float, ancillary and cost to service for performing loans (based on multiple MSR valuation assumptions such as PL CTS, CPR, discount factors, default rates, days/earnings rates on float, etc)
    - The 4.00x multiple on the base MSR (from 25 bps MSF) plus the above 28 bps from float/ancillary provide a combined MSR multiple of 5.1x which is reasonable relative to recent market valuations
  - 88 bps net costs to originate (e.g., includes multiple components such as origination fees, processing fees, warehousing net float, and costs to originate)
  - 35% tax rate
  - For illustrative purposes, we did not assume that the current tax safe harbor would apply in the case of the 1% P&I scenarios
  - In the 1% P&I model, the fair value of float, ancillary and cost to service are capitalized with the 1% P&I position held
  - 20% capital requirement for capitalized MSRs and 6% for any 1% P&I position held
  - All amounts that can be monetized are sold at sale (no excess servicing strip retained)
  - Loans sold into MBS trading at par
  - The 3 bps and 0 bps minimum servicing fee examples (plus float/ancillary) are assumed to be “adequate compensation” for PL servicing – all remaining ongoing servicing economics are therefore not capitalized but rather recognized as earned/incurred. The threshold for “adequate compensation” may be determined to be different than the examples presented.
- The illustrations are not be taken as accounting or tax advice or conclusions
  - Each entity must evaluate the accounting and tax guidance as well as its own policies

## Stylized Illustrations: Performing Loan Compensation Models (cont'd)

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- 25 bps MSF
  - 25 bps required servicing strip + float/ancillary income
  - MSR capitalized at fair value (25bps MSF, float/ancillary, cost to service)
  
- 1% P&I\*
  - Servicer retains 1% of the unguaranteed loan balance with the remainder (99%) sold to the Agency, or pooled to create an MBS
  - Servicer retains float/ancillary income
  - Additional excess interest created from elimination of requirement to hold 25 bps strip can be monetized
  - Other elements of servicing capitalized at fair value (float/ancillary, cost to service)
  
- 12.5 bps MSF
  - 12.5 bps required servicing strip + float/ancillary income
  - Additional excess interest created through reduced required servicing strip can be monetized
  - MSR asset capitalized as the total servicing compensation exceeds “adequate compensation” for performing loans (12.5 bps strip, float/ancillary, cost to service)
  
- 3 bps or 0 bps MSF
  - 3 bps or 0 bps required servicing strip + float/ancillary income
  - Additional excess interest created through reduced required servicing strip can be monetized
  - No capitalized MSR (assuming total compensation, including float/ancillary, equivalent to “adequate compensation”)

*\*Note: The model presented to the MBA in Sep 2008 on the 1% P&I assumed that the 1% applies to the unguaranteed loan balance, similar to the current MSF that is unguaranteed*

# Illustrative Model Comparison – Mortgage Rate Setting

Mortgage Rate Composition	Fee for Service Models				
	25bps (MSR)	1% P&I	12.5bps (MSR)	3bps (No MSR)	0bps (No MSR)
Treasury	4.20	4.20	4.20	4.20	4.20
MBS Spread to Treasury	1.30	1.30	1.30	1.30	1.30
MBS Current Coupon	5.50	5.50	5.50	5.50	5.50
<i>Guarantor Revenue</i>					
G-fee	0.20	0.20	0.20	0.20	0.20
<i>Mortgage Bank Revenue (Origination/Servicing)</i>					
Minimum Servicing Fee (Required to be Held)	0.25	-	0.125	0.03	-
Additional Spread (Hold or Monetize)	0.05	0.30	0.175	0.27	0.30
Total primary/secondary spread	0.50	0.50	0.50	0.50	0.50
<b>Borrower Rate</b>	<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>6.00</b>	<b>6.00</b>

The spread between the borrower rate and the MBS rate (the primary/secondary spread), net of g-fee, combined with float & ancillary income provides the net revenues required to provide for the return on both origination and servicing operations.

The Gain on Sale recorded by the lender represents the present value of the expected profit on both origination and servicing.

The g-fee provides the revenue stream required to provide for the return on the guarantor's operations.

Each guarantor will need to independently ensure that the overall economic return includes the financing obligation for any non-performing loan servicing compensation (g-fee impact not shown in the illustrations).

The lender, taking into consideration individual market conditions, continues to determine the mortgage rate that can be offered to provide for the required expected profit for origination & servicing, regardless of the minimum servicing fee.

Changing the level and/or form of servicing changes the nature of the compensation – cash at sale vs. IO with cash overtime. A reduction of the minimum servicing fee gives the lender more flexibility in their “best execution”. If desired, they can still choose to retain an IO strip without being required to hold it by the guarantor.

# Illustrative Current Model Originator Cash Flows & Accounting

## Illustrative Loan/MBS

1	Note rate	6.00
2	Guarantee fee	(0.20)
3	Minimum servicing fee strip	(0.25)
4	Excess servicing/spread	(0.05)
5	MBS rate	<u>5.50</u>

The spread between the borrower rate and the MBS rate, net of g-fee, combined with float & ancillary income provides the net revenues required to provide for the return on both origination and servicing operations. The Gain on Sale recorded represents the present value of the expected profit on both origination and servicing.

## Cash flows at origination:

6	<b>Pre-tax cash flows:</b>	
7	Net cost to originate	(0.88)
8	Excess servicing monetized	0.20
9	Net pre-tax cash flow	<u>(0.68)</u>
10		
11	<b>Tax cash flows:</b>	
12	Taxable income	(0.68)
13	Tax cash flow @35%	0.24
14	<b>After-tax cash flow</b>	<u>(0.44)</u>

Loan origination and sale often requires an up-front use of cash even though it may be GAAP net income positive. The ultimate realization of the GAAP Gain on Sale depends upon actual borrower prepayments.

The MSR tax “safe harbor” reverses the GAAP Gain on Sale arising from the capitalized MSR to re-align the taxable income (line 12) with the timing of actual servicing cash income & expenses (line 9). However, book (GAAP) tax follows book income (line 24).

The largest component of the MSR asset is the fair value of the 25 bps Minimum Servicing Fee (“MSF”) strip. Historically, for performing loans, net float & ancillary on a present value basis have exceeded the present value of the cost to service in most cases.

If excess servicing were held instead of being monetized (line 18), the fair value of this additional strip would be included as part of the MSR asset.

## Origination Accounting (GAAP):

15	TBA	100.00
16	MSR - minimum servicing fee	1.00
17	MSR - net float/ancillary/cost to service	0.28
18	Excess servicing monetized (cash)	0.20
19	Net cost to originate	(0.88)
20	Net proceeds	<u>100.60</u>
21		
22	Loan funding:	(100.00)
23		
24	<b>GAAP Gain/(Loss) on sale - pre-tax</b>	<b>0.60</b>
25	<b>GAAP Tax (35%)</b>	<b>(0.21)</b>
26	<b>GAAP Gain/(Loss) on sale - post-tax</b>	<b><u>0.39</u></b>

## Ongoing Accounting & Cash Flows – High Level

- **Amortization expenses of the capitalized MSR asset over time (may be part of below MTM)**
- Mark-to-market (“MTM”) of MSR (primarily due to changes in prepayment expectations impacting the fair value of the MSF)
- Receive and recognize cash servicing incomes/expenses (and pay cash taxes)
- Incur cost of required capital

# Illustrative Current MSR Bank Capital Calculation

## Illustrated Capital Calculation\*

	Current Min Adequate	Current Well Capitalized
MSR Fair Value	\$100	\$100
% to apply risk weighting	90%	90%
Assets to apply risk weighting	\$90	\$90
Risk Weighting	100%	100%
Capital Rate (8% min adequate - 10% Well Capitalized)	8%	10%
Equity Required (A)	\$7	\$9
MSR Fair Value	\$100	\$100
Assets to apply risk weighting	(\$90)	(\$90)
Equity Required (B)	\$10	\$10
Total Equity Required (Sum of (A) + (B))	\$17	\$19

\*Note: This **simplified illustration** is only intended to demonstrate reasonableness of the **~20% capital ratio** used throughout subsequent illustrations. It is not intended to be an exhaustive representation of all of the more complex elements in the current capital rules on MSRs.



# Illustrative Current Model Originator Capital Requirements

## Capital effects at origination:

27	Capitalized MSR	1.28
28	Required equity % (Current)	20%
29	Equity required (=20% * capitalized MSR)	0.26
30	Equity after origination (net of tax)	0.39
31	Equity generated/(used)	0.13
32	Required equity % (Basel III proposal*)	100%
33	Equity required (Proposed Basel III) (=100% * MSR)	1.28
34	Equity required (Current)	0.26
35	Add'l Capital under Basel III proposal	1.02
36	Equity generated/(used) - Basel III	(0.89)

\*Example shows 100% effective marginal capital with binding Basel III cap

## Basel III: A global regulatory framework for more resilient banks and banking systems (Dec 2010)

### Threshold deductions

87. Instead of a full deduction, the following items may each receive limited recognition when calculating Common Equity Tier 1, with recognition capped at 10% of the bank's common equity (after the application of all regulatory adjustments set out in paragraphs 67 to 85):

- Significant investments in the common shares of unconsolidated financial institutions (banks, insurance and other financial entities) as referred to in paragraph 84;
- Mortgage servicing rights (MSRs); and
- DTAs that arise from temporary differences.

88. On 1 January 2013, a bank must deduct the amount by which the aggregate of the three items above exceeds 15% of its common equity component of Tier 1 (calculated prior to the deduction of these items but after application of all other regulatory adjustments applied in the calculation of Common Equity Tier 1). The items included in the 15% aggregate limit are subject to full disclosure. As of 1 January 2018, the calculation of the 15% limit will be subject to the following treatment: the amount of the three items that remains recognised after the application of all regulatory adjustments must not exceed 15% of the Common Equity Tier 1 capital, calculated after all regulatory adjustments. See Annex 2 for an example.

89. The amount of the three items that are not deducted in the calculation of Common Equity Tier 1 will be risk weighted at 250%.

Current capital requirements result in a required capital level of ~20% equity capital of the capitalized MSR.

If the MSR is >100% of Tier 1 capital, the required capital for the amount above the Tier 1 capital is dollar-for-dollar capital.

As the MSR is MTM, the capital required will fluctuate with the MSR fair value level. Given the high negative convexity of this IO-like asset, these MTM fluctuations can be quite large.

Basel III as proposed could require significantly higher capital. The marginal capital requirement could be effectively 100% if a company is at or near the capital caps as follows:

- Basel III would require dollar-for-dollar capital on the MSR balance above 10% of Tier 1 common.
- Basel III also proposes a joint cap of 15% of Tier 1 common from the sum of: (i) MSR; (ii) DTAs from temporary differences; & (iii) Significant investments in the common shares of unconsolidated financial institutions.
- Amounts not deducted from capital are risk weighted at 250% which equates to a ~20% capital requirement on the remaining MSR balance not subject to the above caps.

If competing lenders are at or near the capital cap, the rates they offer borrowers may reflect this marginal higher cost of capital. Other lenders, regardless of their Basel III position, may similarly raise rates to maintain their relative market share.

# Illustrative Current Model Originator Capital Requirements (cont'd)

		25bps MSF	
		Current	Basel III
<b>Illustrative Loan/MBS</b>			
1	Note rate	6.00	6.15
2	Guarantee fee	(0.20)	(0.20)
3	Minimum servicing fee strip	(0.25)	(0.25)
4	Excess servicing/spread	(0.05)	(0.20)
5	MBS rate	5.50	5.50
<b>Origination Accounting:</b>			
6	TBA	100.00	100.00
7	MSR - minimum servicing fee	1.00	0.55
8	MSR - net float/ancillary/cost to service	0.28	0.15
9	Excess servicing monetized (cash)	0.20	0.78
10	Net cost to originate	(0.88)	(0.88)
11	Net proceeds	100.60	100.60
12	Loan funding:	(100.00)	(100.00)
13	GAAP Gain/(Loss) on sale - pre-tax	0.60	0.60
14	GAAP Tax (35%)	(0.21)	(0.21)
15	GAAP Gain/(Loss) on sale - post-tax	0.39	0.39

Using our illustrative example and discounting the projected servicing cash flows assuming 100% capital for the marginal MSR, results in an ~15 bps increase in the required mortgage rate so that the originator can return the same gain on sale.

The actual impact of Basel III will depend upon how much of the industry is near or above the capital thresholds.

To the extent originator/servicers are above the cap, these entities will earn lower returns (vs. current) or other entities not at the caps will have the ability to increase rates offered.

Other entities below the caps must also consider the impact of attracting too much incremental volume as to reach their own caps.

Basel III as proposed will put upward pressure on mortgage rates without any change to the current servicing compensation framework.

While Basel III might cap the growth of servicing for some institutions, it is not clear that originators who have struggled with the capital requirements, volatility and hedging of the MSR asset will be attracted to grow their servicing portfolio without higher returns (i.e. higher mortgage rates).

# Illustrative Model Comparison – Cash Flows

		Fee for Service Models				
		25bps (MSR)	1% P&I	12.5bps (MSR)	3bps (No MSR)	0bps (No MSR)
1	Note rate	6.00	6.00	6.00	6.00	6.00
2	Guarantee fee	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
3	Minimum servicing fee strip	(0.25)	-	(0.125)	(0.03)	-
4	Excess servicing/spread	(0.05)	(0.30)	(0.175)	(0.27)	(0.30)
5	MBS rate	5.50	5.50	5.50	5.50	5.50
<b>Cash flows at origination:</b>						
<b>Pre-tax cash flows:</b>						
6	Net cost to originate	(0.88)	(0.88)	(0.88)	(0.88)	(0.88)
7	Excess servicing monetized (cash)	0.20	1.19 *	0.70	1.08	1.20
8	Funding of 1% to Borrower	-	(1.00)	-	-	-
9	Net pre-tax cash flow	(0.68)	(0.69)	(0.18)	0.20	0.32
<b>Tax cash flows:</b>						
11	Taxable income	(0.68)	0.59	(0.18)	0.20	0.32
12	Tax cash flow @35%	0.24	(0.21)	0.06	(0.07)	(0.11)
13	<b>After-tax cash flow</b>	<b>(0.44)</b>	<b>(0.90)</b>	<b>(0.12)</b>	<b>0.13</b>	<b>0.21</b>
14	<b>Variance from current (25 bps)</b>		<b>(0.46)</b>	<b>0.33</b>	<b>0.57</b>	<b>0.65</b>

\* Under the 1% P&I illustration, the excess servicing monetized in line 7 reflects the 4.0x IO multiple on the excess servicing from line 4 for the 99% of the loans not held by the servicer. See line 19 on the next slide for the reconciliation.

## Taxable Income

Taxable income on sale equals the book gain on sale less any capitalized MSR (excluding any excess servicing).

For the 1% P&I illustration, we have assumed for illustrative purposes that the current “safe harbor” would not apply to the 1% P&I interest, as it would require an explicit approval by the regulatory tax authorities. Without the “safe harbor”, the cash taxable income represents the book gain on sale (shown on the next slide on line 13); this is in contrast to the 25 bps current servicing compensation model where cash taxable income in line 11 equals actual cash flow in line 9.

The tax calculation reflected above is for illustrative purposes only; it facilitates a high level analysis amongst the various models. A final 1% P&I implementation could require different calculations; the above illustration is not to be taken as accounting or tax advice or conclusions.

## Initial Cash Flows

The smaller the MSF, the greater the potential for monetization of the loan components at sale.

The 1% P&I model limits the amount that can be monetized by requiring a 1% position in the loan P&I.

## Ongoing Cash Flows

No change to float/ancillary & costs to service under any of the models.

Ongoing cash proceeds are reduced to the extent cash is collected at sale instead of holding the IO as part of an MSR asset. Increased certainty in cash flows by not holding an IO strip.

Cash received upfront may be invested (including in IO) to provide further returns to the servicer.

**The Agencies’ decisions on implementing collateral requirements to cover origination and servicing rep & warrants could also impact the upfront and ongoing cash flows.**

# Illustrative Model Comparison – Accounting

## Fee for Service Models

	25bps (MSR)	1% P&I	12.5bps (MSR)	3bps (No MSR)	0bps (No MSR)
1 Note rate	6.00	6.00	6.00	6.00	6.00
2 Guarantee fee	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
3 Minimum servicing fee strip	(0.25)	-	(0.125)	(0.03)	-
4 Excess servicing/spread	(0.05)	(0.30)	(0.175)	(0.27)	(0.30)
5 MBS rate	5.50	5.50	5.50	5.50	5.50

## Gain on Sale

Differences in gain on sale are the result of differences in the MSR economics capitalized upon sale.

## Origination Accounting:

6 TBA	100.00	99.00	100.00	100.00	100.00
7 MSR - base compensation	1.00	1.00	0.50	-	-
8 MSR - net float/ancillary/cost to service	0.28	0.28	0.28	-	-
9 Excess servicing monetized (cash)	0.20	1.19	0.70	1.08	1.20
10 Net cost to originate	(0.88)	(0.88)	(0.88)	(0.88)	(0.88)
11 Net proceeds	100.60	100.59	100.60	100.20	100.32
12 Loan funding:	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
13 GAAP Gain/(Loss) on sale - pre-tax	0.60	0.59	0.60	0.20	0.32
14 GAAP Tax (35%)	(0.21)	(0.21)	(0.21)	(0.07)	(0.11)
15 GAAP Gain/(Loss) on sale - post-tax	0.39	0.38	0.39	0.13	0.21

## Comparison of Gain/(Loss) on sale for each alternative:

16 GAAP Gain/(Loss) on sale - pre-tax	0.60	0.59	0.60	0.20	0.32
17 Adjustments:					
18 Uncapitalized fair value of servicing *	-	-	-	0.40	0.28
19 Value of excess on 1% P&I Strip *	-	0.01	-	-	-
20 Pre-tax Economics	0.60	0.60	0.60	0.60	0.60

\* Recognized as incurred/earned rather than at sale into MBS.

## 1% P&I

For comparative purposes the 1% held is reflected as a separate part of the TBA sale reflected in line 7 as "MSR". The actual accounting for this position might be classified as a loan or other investment.

## Ongoing P&L

Each of the alternatives reduces the volatility/uncertainty of the realization of the non-cash elements of the initial gain on sale.

Amounts not capitalized are recognized as earned/incurred over time rather than recognized as part of the gain on sale on a fair value basis and then expensed against actual amounts earned in the future. This results in greater P&L subsequent to the initial sale versus having these amounts capitalized at sale.

# Illustrative Model Comparison – Capital

		Fee for Service Models				
		25bps (MSR)	1% P&I	12.5bps (MSR)	3bps (No MSR)	0bps (No MSR)
1	Note rate	6.00	6.00	6.00	6.00	6.00
2	Guarantee fee	(0.20)	(0.20)	(0.20)	(0.20)	(0.20)
3	Minimum servicing fee strip	(0.25)	-	(0.125)	(0.03)	-
4	Excess servicing/spread	(0.05)	(0.30)	(0.175)	(0.27)	(0.30)
5	MBS rate	5.50	5.50	5.50	5.50	5.50
<b>Capital effects at origination:</b>						
6	Capitalized MSR	1.28	1.28	0.78	-	-
7	<b>Required equity % (Current)</b>	<b>20%</b>	<b>6%</b>	<b>20%</b>	-	-
8	Equity required (= x% *capitalized MSR)	0.26	0.12	0.16	-	-
9	Equity after origination (net of tax)	0.39	0.38	0.39	0.13	0.21
10	<b>Equity generated/(used)</b>	<b>0.13</b>	<b>0.27</b>	<b>0.23</b>	<b>0.13</b>	<b>0.21</b>
11	<b>Variance from current (25 bps)</b>		<b>0.13</b>	<b>0.10</b>	<b>(0.00)</b>	<b>0.07</b>

\* Equals line 15 on the previous slide for GAAP Gain/(Loss) on sale – post tax

Numbers may not foot due to rounding

The 1% P&I illustration assumes 6% capital on the 1% held and 20% capital on the net float/ancillary & cost to service capitalized.

Illustration assumes marginal MSR balance is below the Basel III caps. See previous slides on the potential impact of Basel III with no change to the servicing compensation structure for performing loans.

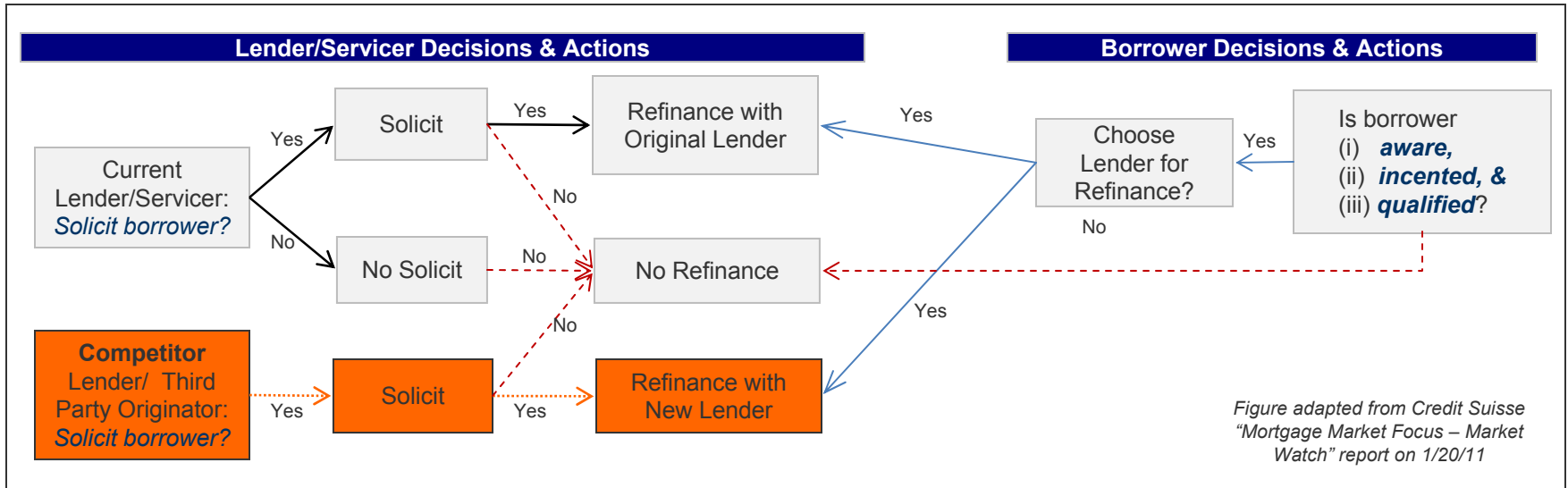
Lowering the MSF requires less capital for the servicer.

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## **IV. TBA MARKET CONSIDERATIONS**

# TBA Convexity: Prepayment Considerations

- **Prepayment Drivers:** The primary driver for refinancing is the borrower's incentive to lower payments when rates decline, driven by a combination of:
  - i. borrower's **awareness** of the possibility to lower future payments
  - ii. borrower's assessment of the **incentive**, or net benefit of doing the refinancing [i.e., do future expected benefits exceed current refinance costs over the borrower's personal break-even horizon]
  - iii. borrower's ability to execute the refinancing option by **qualifying** to close on a new loan
  
- Analyses on the effects of a change in the MSF (aka a servicer's "skin-in-the-game") on potential refinance/churn impacts should consider the following questions:
  - i. What effect does the change in a MSF have on **existing lender and servicer incentives**?
  - ii. What effect does the change in a MSF have on **existing borrower incentives to agree to refinance their loan**?



A change in the MSF would not directly change the borrower **incentives** or **qualifications**. In the current environment of high borrower savvy and multiple solicitation channels (e.g. from the origination side), it is unclear that increases in borrower **awareness** stemming from changes in the servicer's MSF will occur if rates fall.

On the lender/servicer side, if rates have dropped to sufficiently incent borrowers to refinance, lenders compete to refinance the borrower. The current lender/servicer risks losing the borrower to a competitor (lender/TPO) if they themselves are not soliciting their borrowers who are "in the money". As recent research articles have suggested (see the Credit Suisse 1/20/11 report), the larger the current MSF, the larger this potential "loss" of losing their existing MSR asset if they do not actively compete to recapture their current borrower. Thus **the current servicing compensation model can incent servicer solicitation of the borrower, while a reduction in the MSF would reduce this pre-existing incentive.**

# TBA Convexity: Empirical Analysis of Potential Changes to the MSF

## Third Party Originators

Given the limited data available to estimate servicing fees and prepayments, an arguably worst case proxy for reducing the MSF is to look at Third Party Originators (TPO) who in the past have represented more than 50% of production volumes

The TPO effect is often viewed as a proxy for borrower solicitation for prepayment by third parties.

The effect is studied because of investor assumption of higher prepayments due to:

- Borrower solicitation
- No “skin in the game”
- Churning

TPO-related prepayments range from minimal impact of flat to +5% of non-TPO over the long term to a peak of +30%, evidenced in Q2 2009

## Weighted Average Coupon

Reducing the MSF could result in a Weighted Average Coupon (WAC) reduction due to originator securitization of tighter range of note rates

All else equal, the originator can now deliver more loan note rates closer to the MBS coupon rate given the removal of a mandatory 25 bps MSF wedge between the two

Current pooling practice typically allows a wide range of rates exceeding 25 bps above the security coupon

Besides the natural reduction in expected gross WAC, complementary changes could be considered in future pooling practices to tighten the WAC pooling range

Modeled and empirical prepayments confirm the security enhancement related to tighter WAC

**Prepayment behavior and TBA security valuation has been historically impacted by TPO and WAC structure. Over the years, many analysts have written that a reduction in a minimum servicing fee may increase prepayments, but also result in a reduced gross WAC. An empirical analysis of the impacts should evaluate both counteracting effects.**

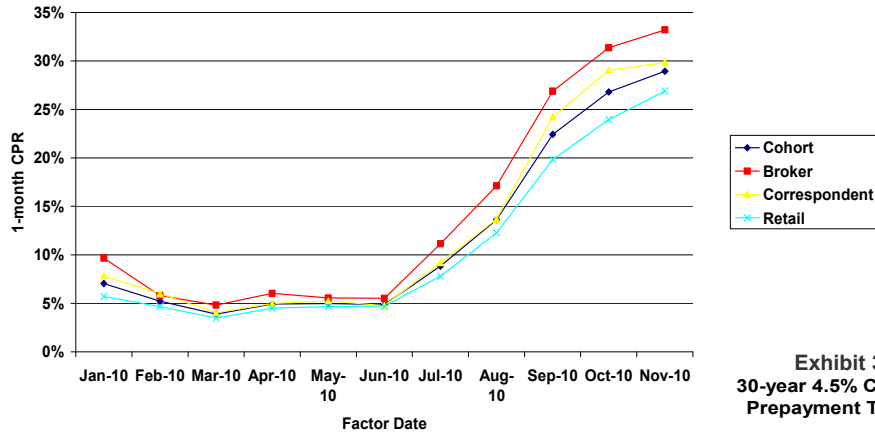


# TBA Convexity: TPO and WAC Prepayment Observations

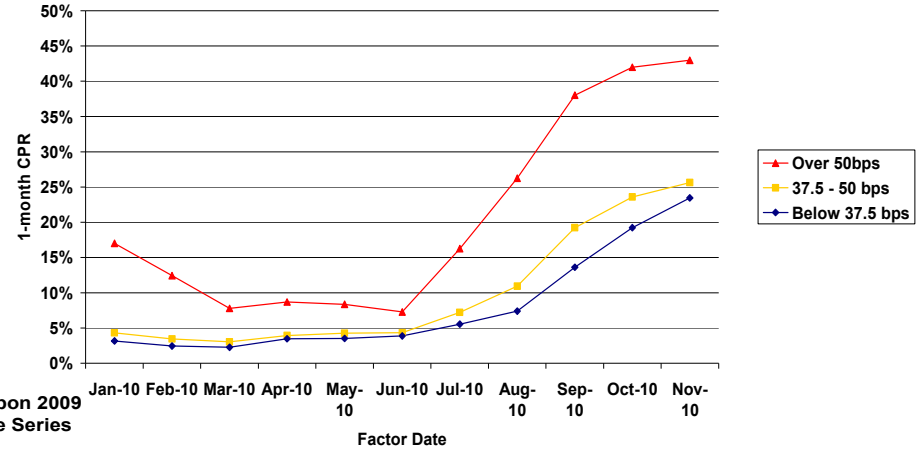
Source: Freddie Mac

## Gold 30-year 4.5% Coupon

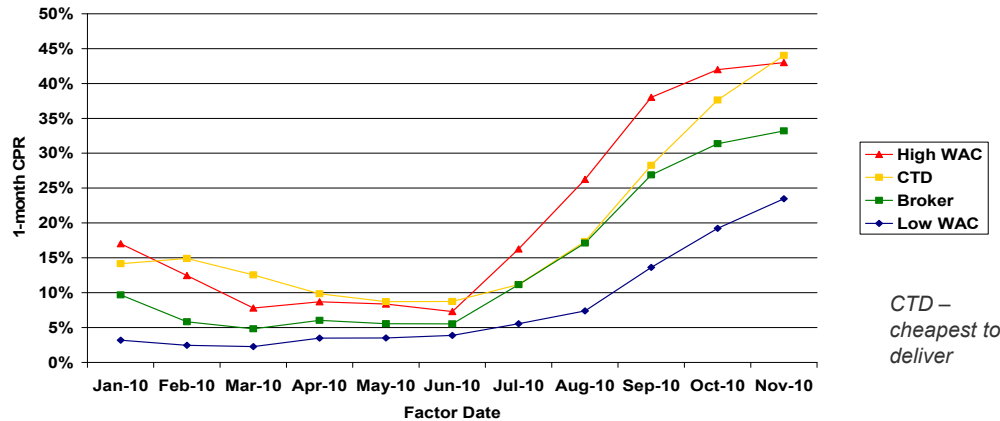
**Exhibit 1:**  
30-year 4.5% Coupon 2009 Prepayment  
by Origination Channel Time Series



**Exhibit 2:**  
30-year 4.5% Coupon 2009 Prepayment  
By WAC Bucket Time Series



**Exhibit 3:**  
30-year 4.5% Coupon 2009  
Prepayment Time Series



*CTD –  
cheapest to  
deliver*

Exhibit 1 demonstrates broker/TPO prepayment speeds higher than correspondent or retail. Recent research has suggested that this differential may be more due to other loan characteristics such as loan size, and when controlling for this, the differentials in speeds are extremely small up to \$325K (e.g., see the Amherst Mortgage Insight 2/2/11 report). Exhibits 2 & 3 show the slower prepayment speeds associated with lower WACs.

An analysis of a reduction in the “skin in the game” from a reduced MSF should take into account the net convexity impact from perceived faster speeds (which one could arguably proxy worst case by TPO speeds) and reduced gross WAC changes.

# TBA Convexity Analysis: “No Skin in the Game” TPO & WAC Net Impact

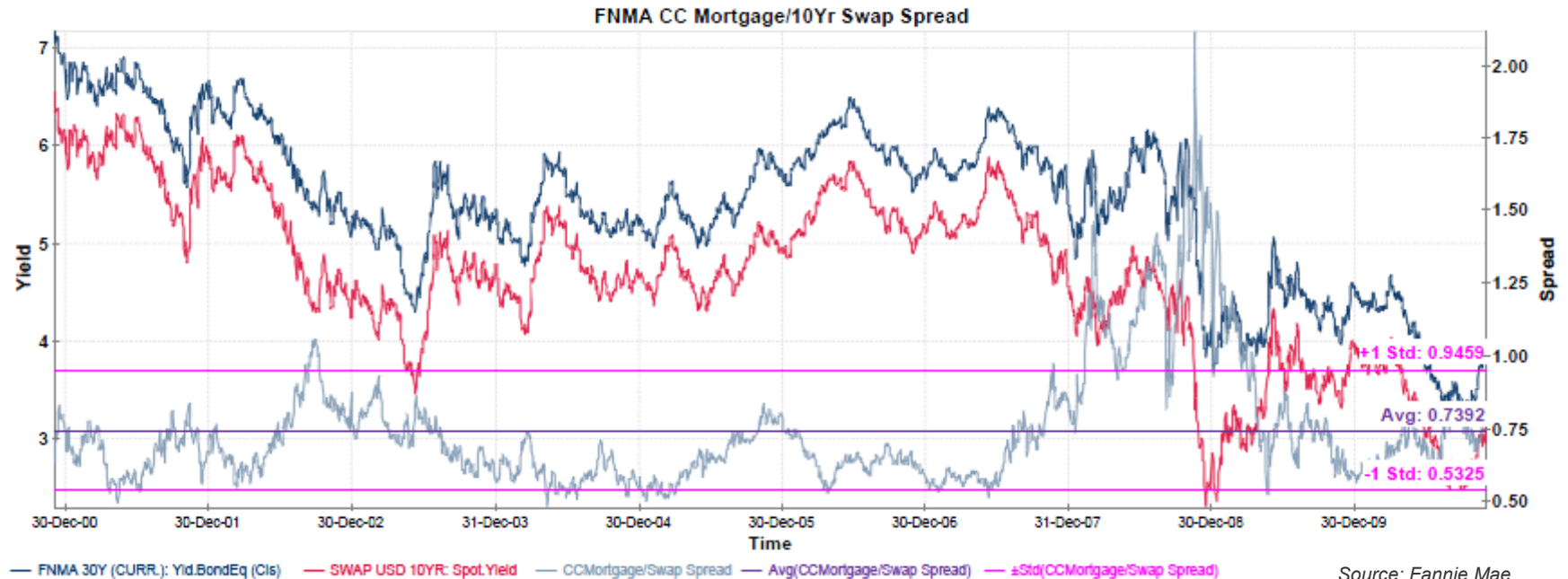
- The illustrative sensitivity analysis below uses the extreme assumption that all of the loans delivered in the new current coupon security will exhibit faster TPO prepayment speeds for the entire life of the loans. The illustrative TPO speed factors reflect increases of 5%, 10%, 20%, 30%, 50%, 75%, and 100% over baseline prepayment speeds
  - The more normal long term difference in TPO vs. baseline prepayment speeds is proxied below with a 5% increase
  - A shorter-term, extreme difference in TPO vs. baseline prepayment speeds is proxied below with a 30% increase (based on peak observations of 25CPR vs. 20CPR on non-TPO in Q2 2009)
- The illustrative analysis below also includes the likely effect of a reduction in WAC (from 4.20% to 4.00%) and it estimates a pay up that offsets the convexity costs from some increased TPO speeds in current coupons. One recent article from Barclay’s (Securitized Products Weekly report 2/4/2011) concluded that “the effect of the lower WAC should overwhelm that of the steeper refinancing curve from any churning effect”, and should not “substantially impact the valuations of the TBA” but the article states “adverse selection [is] the issue at hand.”

Security Name	Base Model			Price with only TPO Impact					WAC Value		Net Price with TPO & WAC Impact				
	TBA Price	WAC	OAS (bp)	TPO speed factor	WAC	TBA Price	TBA Price change	Borrower Rate Impact (bps)	TBA Price	Payup	TPO speed factor	WAC	TBA Price	TBA Price change	Borrower Rate Impact (bps)
FNCL 3.5	100.45	4.20	12.10	1.05	4.20	100.41	(0.039)	0.99	100.61	0.158	1.05	4.00	100.57	0.119	(2.96)
FNCL 3.5	100.45	4.20	12.10	1.10	4.20	100.38	(0.075)	1.87	100.61	0.158	1.10	4.00	100.54	0.083	(2.08)
FNCL 3.5	100.45	4.20	12.10	1.20	4.20	100.31	(0.140)	3.51	100.61	0.158	1.20	4.00	100.47	0.018	(0.44)
FNCL 3.5	100.45	4.20	12.10	1.30	4.20	100.25	(0.199)	4.97	100.61	0.158	1.30	4.00	100.41	(0.041)	1.02
FNCL 3.5	100.45	4.20	12.10	1.50	4.20	100.15	(0.300)	7.50	100.61	0.158	1.50	4.00	100.31	(0.142)	3.55
FNCL 3.5	100.45	4.20	12.10	1.75	4.20	100.05	(0.403)	10.07	100.61	0.158	1.75	4.00	100.21	(0.245)	6.12
FNCL 3.5	100.45	4.20	12.10	2.00	4.20	99.97	(0.486)	12.16	100.61	0.158	2.00	4.00	100.12	(0.328)	8.21

Source: Fannie Mae

**Under various scenarios of increased TPO prepayment speeds applied to all loans in the security for the entire life of the loans, the sensitivity analyses show that under the perceived worst case of no “skin in the game” (with MSF=0), there is an important offsetting benefit from a reduced WAC that could produce a net improvement in the value of the security.**

# TBA Market: Efficient and Resilient over Time



- FNMA Current Coupon MBS is par price security interpolated between 30-day forward prices, bracketed by above and below par MBS securities
- 10-Year Swap Rate is a benchmark interest rate for underlying mortgages rates
- Observe a standard deviation of ~20 bps over a 10-year horizon with financial crisis representing the peak disruption in 2008

**The TBA market has been both efficient and resilient, withstanding multiple innovations in product development, shifts in securitization structures (e.g. evolving underwriting practices and annual loan limits), and changes in market participants. It has responded relatively quickly to new market event information once the changes were clearly communicated with good lead time for implementation.**

# Reference Materials: Sample Industry Research Articles

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## **Sample Research Articles on FHFA Mortgage Servicing Compensation Initiative (2011):**

- “The Outlook - Eliminating excess servicing: the prepayment impact”, Deutsche Bank, Feb 9, 2011
- “Securitized Products Weekly – Agency MBS”, Barclays Capital, Feb 4, 2011
- “Alternative Compensation Arrangement for Mortgage Servicing – The Debate Begins”, Amherst Securities Group LP, Feb 2, 2011
- “Capital Fuels the Change in Servicing”, Deutsche Bank, Feb 2, 2011
- “US Fixed Income Markets Weekly – MSR Developments”, JP Morgan, Jan 28, 2011
- “Securitized Products Weekly – The Future of the MSR”, JP Morgan, Jan 28, 2011
- “Implications of the Changing MSR Landscape on Rates Markets”, Barclays Capital, Jan 28, 2011
- “MBS: Servicing Fee Down to 0?”, BNP Paribas, Jan 27, 2011
- “Securitization Weekly - Agency MBS”, Bank of America: Merrill Lynch, Jan 26, 2011
- “Reinventing Mortgage Servicing”, Deutsche Bank, Jan 26, 2011
- “Securitized Products Weekly - MBS Market Commentary”, JP Morgan, Jan 21, 2011
- “Agency MBS”, Barclay’s Capital, Jan 20, 2011
- “Mortgage Market Focus – Market Watch”, Credit Suisse, Jan 20, 2011

## **Sample Research Articles on 12.5bps Reduced Servicing Initiative (2003 – 2007):**

- “Reduced Servicing Pools – A Market Update”, Credit Suisse, May 2007
- “Significance of Minimum Servicing”, JP Morgan, Feb 2006
- “Pass-Throughs: The Complexity of Minimum Servicing”, Merrill Lynch, Jan 2005
- “Potential TBA Change – Lowering Minimum Servicing”, UBS, Jun 2003
- “Proposed Changes in the Minimum Servicing Fee”, UBS, Dec 2004