The Honorable Melvin L. Watt
Director, Federal Housing Finance Agency
Constitution Center (OGC) 8th Floor
400 7th Street, SW
Washington, DC 20024

Re: June 5, 2014, Request for Input on Fannie Mae and Freddie Mac Guarantee Fees

Dear Director Watt:

On June 5, 2014, the Federal Housing Finance Agency (FHFA) released a request for input from the public on the optimum level of guarantee fees (g-fees) that Freddie Mac and Fannie Mae (the GSEs) charge to their lenders that would be required to protect taxpayers, and the implications for mortgage credit availability. As leaders of the Housing Finance Policy Center at the Urban Institute, we are pleased to have this opportunity to provide this response pursuant to your request. After reviewing the information released by the FHFA we have reached the following conclusions.

- Transparency regarding the assumptions made and numbers used in the setting of g-fees is critical, because guarantee fee determination is an art, not a science. A few decisions about which numbers to use will have an enormous impact on what constitutes appropriate pricing up and down the risk spectrum.
- The three most important assumptions are whether to include future g-fee premiums as capital, what return on equity to assume, and what if any capital buffer to require of the GSEs beyond that needed to cover expected losses under a stress scenario.
- Under any reasonable set of assumptions, the least-risky borrowers (high credit score [FICO]/low loan-to-value ratio [LTV]) are paying the most that the numbers justify or the market will bear. Raising g-fees on this group will result in adverse selection, with banks selling only higher-risk loans to Fannie and Freddie.
- Any flattening of pricing across the credit spectrum will have to come from decreasing pricing for lower-FICO/higher-LTV loans. The FHFA could possibly justify a modest reduction in pricing on this end of the spectrum, depending on the results of the GSEs' internal modeling.
- Setting g-fees can be very assumption-driven. Once total g-fees are set to cover expected losses under stress, expenses, and the payroll tax surcharge, the mission of the GSEs—including the duty to serve—should be taken into account in determining the required amount of capital, the division of that capital among risk buckets, and any required return on capital.

In this response, we first present our research, including sensitivity analyses. We then compare our results to those the FHFA has publicly released. In the final section, we present our conclusions.

Methodology for Determining G-Fees

The theoretical calculation for setting guarantee fees is straightforward. It consists of three components: the required return on capital, expected losses, and other costs (administrative costs + 10 basis point [bps] payroll tax surcharge required by the Temporary Payroll Tax Cut Continuation Act of 2011).[1] The required return on capital depends on the after-tax return required, as well as the amount the firm could earn from investing the capital in safe investments, which we refer to as the "reinvestment rate."

Thus, the formula for setting g-fees is: g-fees = ([(after-tax return on capital/(1 – tax rate)) – reinvestment rate on capital] x [amount of capital required]) + expected losses + administrative costs + 10 bps payroll tax.

However, implementing this calculation is not a simple mathematical exercise. Almost every element requires judgment about which numbers to use.

- What are the expected losses?
- How much capital is required?
- What is the after-tax return on capital?

Each of these items has a large effect. However, the capital calculations have considerably more impact than do the expected loss numbers.

Calculating Expected Losses: Degree of Stress and Mortgage Insurance Are Important

For the purposes of this response, we use a simplified framework that includes two scenarios: a stress scenario and a normal scenario. We define defaults from the 2007 vintage of loans as the stress scenario, and 2001 as the normal scenario. We use the Freddie Mac credit database, released in support of their STACR (Structured Agency Credit Risk) deals, to calibrate defaults, and we apply a severity factor to get from defaults to losses. We align our definition of default with the definition of "credit event" in the dataset: the loan is considered in default if it goes 180 days delinquent or is liquidated in a short sale, deed-in-lieu, foreclosure sale, or REO sale before that point. Loans that are repurchased are removed from both the numerator and denominator for this analysis.

The database covers defaults to date, but expected losses require an estimate of lifetime defaults, to which a severity is applied. To calculate lifetime defaults, we apply the methodology in Himmelberg and colleagues (2012). We start with the cumulative default rate as given in the Freddie credit database. We then adjust for (1) loans that are currently 60 to 180 days delinquent and (2) loans that are likely to go delinquent in the future.[2] The results of this default analysis are shown in panels A and B of table 1, by FICO and LTV buckets.

Table 1. Historical Default and Loss Rates

Panel A: Stressed Defaults, 2007

	≤ 60	>60, ≤80	>80, ≤97	>97	All
<620	22.7%	32.2%	36.3%	42.2%	32.0%
≥620, <700	11.7%	22.1%	28.5%	34.4%	23.0%
≥700, <740	5.6%	14.1%	19.5%	21.1%	14.0%
≥740	1.8%	6.6%	11.8%	13.6%	6.4%
All	5.4%	13.4%	21.4%	26.8%	13.9%
Severity	0.3	0.4	0.25	0.3	

Panel B: Normal Defaults, 2001

	≤60	>60, ≤80	>80, ≤97	>97	All
<620	2.7%	4.4%	8.4%	22.5%	5.7%
≥620, <700	0.9%	1.9%	4.6%	6.6%	2.7%
≥700, <740	0.3%	0.7%	1.7%	3.0%	0.9%
≥740	0.1%	0.3%	0.8%	1.3%	0.3%
All	0.4%	1.0%	3.3%	3.5%	1.5%
Severity	0.1	0.2	0.15	0.2	

Panel C: Stressed Losses, 2007 (basis points)

	≤60	>60, ≤80	>80, ≤97	>97
<620	680	1,286	908	1267
≥620, <700	352	884	712	1031
≥700, <740	168	563	488	633
≥740	54	265	295	408
All	161	538	536	803

Panel D: Normal Losses, 2001(basis points)

	≤60	>60, ≤80	>80, ≤97	>97
<620	27	87	127	450
≥620, <700	9	39	69	133
≥700, <740	3	14	26	60
≥740	1	6	12	25
All	4	21	49	69

To go from lifetime defaults to lifetime losses, we apply a group of severity factors, shown on the bottom line of panels A and B. The severity covers both the likelihood that a loan that goes 180 days delinquent will liquidate and the loss to the GSEs if liquidation occurs. We selected severity levels that correspond loosely to the severities applied to Freddie's STACR and Fannie's CAS (Connecticut Avenue Securities) transactions, as shown below.

Severities by LTV, under Normal and Stress Environments

	≤60 LTV	>60, ≤80 LTV	>80, ≤97 LTV	>97 LTV
Stress	0.30	0.40	0.25	0.30
Normal	0.10	0.20	0.15	0.20

A few observations are in order. The severities differ for different LTV buckets, and they are higher in stress environments than in normal environments. This is consistent with, although simpler than, the methodology used in the STACR and CAS deals. Loans with LTVs ≤60 have lower severities than loans with LTVs of [>60, ≤80], because the borrowers have more equity in their homes. Loans with LTVs >80 have lower severities than loans with LTVs of [>60, ≤80], because the higher-LTV loans have mortgage insurance (charter requirements do not allow the GSEs to take a first loss on any mortgage with an LTV >80). Our assumptions are consistent with the last two CAS deals, in which the loans with >80 LTV are assigned a peak severity of 25 percent, while the [>60, ≤80] LTV loans are assigned a 40 percent peak severity.[3] Of course, varying these assumptions will affect both g-fees and required capital.

Lifetime losses (in basis points) in both the normal scenario and the stress scenario are shown in panels C and D of table 1. These numbers are derived by applying the severity factors to the default rates shown in panels A and B.

We can use this information to calculate expected losses, as shown in table 2. In this case, we define expected losses as 95 percent of the normal scenario plus 5 percent of the stress scenario. While admittedly arbitrary, we believe the 95/5 split is reasonable. Although it overweights the 2007 scenario, that compensates for the fact that in this simplified model we have not included any moderate stress scenarios. The totals are based on the composition of the 2012 book of business, which is shown in panel A of table 2. Panel B shows the expected default rate, based on the assumed 95 percent normal/5 percent stress split. Panel C shows the expected loss rate, which incorporates loss severity. The expected annual cost, shown in panel D, was obtained by dividing the losses by the period during which the credit guarantee is expected to be outstanding, which we have assumed to be four years.[4]

Table 2. Expected Losses on New Products

Panel A: 2012 Composition

	≤ 60	>60, ≤80	>80, ≤97	>97	All
<620	0.0082%	0.0129%	0.0001%	0.0000%	0.0212%
≥620, <700	1.4%	3.6%	1.1%	0.0%	6.1%
≥700, <740	2.9%	9.4%	3.5%	0.0%	15.8%
≥740	18.2%	47.7%	12.2%	0.0%	78.1%
All	22.5%	60.7%	16.8%	0.0%	100.0%

Panel B: Expected Lifetime Default Rates

	≤60	>60, ≤80	>80, ≤97	>97	All
<620	3.71%	5.76%	9.83%	23.50%	4.98%
≥620, <700	1.43%	2.95%	5.78%	8.02%	3.11%
≥700, <740	0.58%	1.37%	2.60%	3.89%	1.49%
≥740	0.20%	0.60%	1.38%	1.87%	0.63%
All	0.33%	0.85%	1.92%	2.96%	0.92%

Panel C: Expected Lifetime Losses (basis points)

	≤60	>60, ≤80	>80, ≤97	>97
<620	60	147	166	491
≥620, <700	26	81	101	178
≥700, <740	11	41	49	88
≥740	4	19	27	44
All	6	26	36	68

Panel D: Expected Annual Default Costs (basis points)

	≤60	>60, ≤80	>80, ≤97	>97
<620	15	37	41	123
≥620, <700	7	20	25	44
≥700, <740	3	10	12	22
≥740	1	5	7	11
All	2	6	9	17

An example will make the calculation of the annual default rate clearer. In panel B, the [≥620, <700] FICO, [>80, ≤97] LTV bucket shows expected lifetime defaults of 5.78 percent. (This is, in turn, composed of a default rate of 4.6 percent during normal periods and 28.5 percent during stress periods.) Multiplying by the assumed severity of 0.25 for the stress scenario and 0.15 for the normal scenario gives us the expected lifetime loss of 101 bps in panel C. Dividing by the assumed duration of 4 translates into 25 bps of expected losses per year in panel D.

Calculating Required Capital: Including Future Income Makes a Big Difference

How do we calculate g-fees from these numbers? As pointed out earlier, we need to know the required amount of capital times the return on capital. But what is the required amount of capital? How do we determine capital requirements for financial institutions in general, and how does that vary for institutions in conservatorship? In a private financial institution, capital is generally determined by applying a stress test to derive the minimum amount needed to survive the stress, plus a cushion to avoid customers fleeing the entity if the stress scenario materializes. It seems reasonable that for institutions in conservatorship, with a very large amount of government backing, the stress without the cushion is sufficient.

Let us assume two different ways of determining the minimum capital required by a financial institution: (1) basing the requirement on a worst-case stress; and (2) basing the requirement on a worst-case stress, but allowing expected income to reduce the amount of capital required. (Later in this response, we consider the effect of requiring capital to reflect worst-case stress plus a cushion.)

Table 3 shows the implied amount of capital required and the g-fees under each method. Panels A, B, and C show the capital requirements for a worst-case stress (sizing capital to the single worst performing year), with no credit for guarantee fee income earned. In this case, the amount of capital required for each LTV/FICO combination equals the losses on the 2007 vintage of loans, weighted based on the 2012 book of business, as that is more representative of new production. This case is conservative, because we are not considering the fact that even in 2007, the GSEs' book of business included loans from earlier years, nor are we taking into account any income generated by those loans over their life. Thus, as shown in panel A, the amount of required capital for the [≥620, 700] FICO, [>80, ≤97] LTV bucket is 712 basis points (28.5 percent stressed defaults times 0.25 loss severity).

Two items in these calculations are particularly interesting. First, for low-FICO buckets, the amount of capital necessary to support the [>60, ≤80] LTV bucket is often higher than the amount required for the [>80, ≤97] LTV bucket, because the latter has mortgage insurance, and hence a lower severity. That is, the lower default rate on the [>60, ≤80] LTV bucket is more than offset by the higher severity. Second, losses on the 2007 Freddie vintage totaled 485 basis points; stress losses are 292 basis points based on the 2012 book of business.

To calculate g-fees, we assume a 10 percent required return on equity (ROE) after taxes and a 2 percent reinvestment rate on that capital, then we add the expected annual default costs from the right side of table 2.[5] We are not endorsing a 10 percent ROE; we are using it for expository purposes. (We look at setting an ROE for the GSEs later in this comment.) G-fees before administrative expenses and the payroll tax surcharge are shown in panel B, and g-fees after administrative expenses and the payroll tax surcharge in panel C. The only difference between these two panels is that in panel C we have added 17 bps: 7 for administrative expenses and 10 for the payroll tax. For the [≥620, <700] FICO, [>80, ≤97] LTV bucket, the required guarantee fee to cover the return on capital and expected losses is 121 bps. Adding 17 bps brings the total g-fee for this bucket to 138 bps.

Panels D, E, and F of table 3 reproduce these calculations with one major difference: we allow g-fee income to reduce the required amount of capital. This requires that we solve for both g-fees and capital.[6] Jointly solving for these two variables gives us the capital requirements in panel D and the annual g-fee before administrative expenses and the payroll tax surcharge in panel E. Adding 17 bps for administrative expenses and the payroll tax surcharge gives us the g-fees in panel F. For example, on the [≥620, <700] FICO, [>80, ≤97] LTV bucket, we calculate 429 bps for required capital, resulting in a g-fee of 83 bps. Note that both the capital requirement and the guarantee fees are much lower here than in the panels A–C calculations, where capital is based solely on stressed losses with no credit given for g-fee income. The difference in required capital between 712 bps in panel A and 429 bps in panel D (283 bps) reflects the fact that the entity will receive lifetime guarantee fees of roughly 332 bps on that FICO/LTV bucket (83 bps, as shown in panel E, times the duration of 4), reduced to account for the fact that the income will not be received if there is a default.[7]

The important conclusion from these calculations is that the method of determining required capital produces significantly different g-fees, as shown by comparing panels C and F of table 3. In the [≥620, <700] FICO, [>80, ≤97] LTV bucket, the g-fees (after administrative expenses and payroll tax) are 138 basis points if the required capital does not take into account g-fee income and 100 basis points if it does. Later in this response, we will argue that the latter is more appropriate.

Table 3. Capital Allocation

Panel A: Capital Allocated to Stressed Scenario
(no credits for g-fee)

	≤60	>60, ≤80	>80,≤97	>97	All
<620	680	1,286	908	1,267	1,050
≥620, <700	352	884	712	1,031	727
≥700, <740	168	563	488	633	474
≥740	54	265	295	408	220
All	88	348	363	523	292

Panel B: G-fee before Overhead Surcharges
(no credits for g-fee)

	≤60	>60, ≤80	>80, ≤97	>97	All
<620	106	209	163	292	169
≥620, <700	54	139	121	182	115
≥700, <740	25	86	77	107	73
≥740	8	40	46	66	34
All	13	53	58	87	45

Panel C: G-fee after Overhead Surcharges
(no credits for g-fee)

	≤60	>60, ≤80	>80, ≤97	>97	All
<620	123	226	180	309	186
≥620, <700	71	156	138	199	132
≥700, <740	42	103	94	124	90
≥740	25	57	63	83	51
All	30	70	75	104	62

Panel D: Capital Allocated to Stressed Scenario
(with credits for g-fee)

	≤60	>60, ≤80	>80,≤97	>97	All
<620	425	802	537	619	653
≥620, <700	218	550	429	612	448
≥700, <740	103	350	299	375	293
≥740	33	163	180	245	135
All	53	214	220	310	178

Panel E: G-fee before Overhead Surcharges
(with credits for g-fee)

	≤60	>60, ≤80	>80, ≤97	>97	All
<620	72	144	113	206	116
≥620,<700	36	94	83	126	78
≥700,<740	17	57	52	72	49
≥740	5	26	31	44	22
All	9	35	38	58	30

Panel F: G-fee after Overhead Surcharges
(with credits for g-fee)

	≤60	>60, ≤80	>80, ≤97	>97	All
<620	89	161	130	223	133
≥620,<700	53	111	100	143	95
≥700,<740	34	74	69	89	66
≥740	22	43	48	61	39
All	26	52	55	75	47

Panel G: Present Allocated Capital

	≤60	>60, ≤80	>80, ≤97
≥620, <700	182	642	712
≥700, <740	118	392	520
≥740	48	218	320

Panel H: Actual G-fee

	≤60	>60, ≤80	>80, ≤97
≥620,<700	55	82	80
≥700,<740	50	65	64
≥740	48	57	56

Panel I: FHFA-Calculated G-fee

	≤60	>60, ≤80	>80, ≤97
≥620,<700	50	139	152
≥700,<740	36	89	112
≥740	29	54	73

Comparing Results to the Present System: Major Impact from Including G-Fee Income

In the request for input, the FHFA provided both actual g-fees for the first quarter of 2014 and its calculation of g-fees based on current g-fees, estimated costs, and required capital.[8] This information is averaged both across GSEs and across all products, and is displayed in panels G, H, and I of table 3. We compare it to our calculations for 30-year fixed-rate products, in which we set capital based on a stress environment. We believe the comparison is meaningful because the bulk of current GSE production is in 30-year fixed-rate products. And while g-fees on 15-year mortgages would be lower, g-fees on adjustable-rate loans would be higher, offsetting some if not all of the difference from 30-year production. In table 4, we compare the current system to one in which required capital is determined using the stress scenario, with and without credit for guarantee fees.

As shown in panels A, B, and C of table 4, most of the capital requirements we calculate (if we do not take future g-fee income into account) are a bit higher than the present allocated capital in the FHFA request, and our calculated g-fees are higher in some buckets and lower in other buckets than the FHFA-calculated g-fees. (Positive numbers in cells mean the FHFA calculations produce a lower number; negative numbers mean our results are lower.)

Now let's compare the results in which required capital is calculated giving credit for future guarantee fees. In this situation (shown in panels D, E, and F of table 4), for most FICO/LTV buckets, our calculated capital requirement is considerably lower than the FHFA's, as are our g-fees when compared with theirs. This difference is largest for the lowest-FICO/highest-LTV buckets, which earn the highest g-fees. For example, for the [≥620, <700] FICO, [>80, ≤97] LTV bucket, we calculated 429 bps of required capital (versus the FHFA's 712) and a guarantee fee of 100 bps, which is 52 bps lower than the FHFA's estimate of 152 bps.

Table 4. Differences from Present System

Panel A: In Allocated Capital
(with no credit for g-fee income)

	≤60	>60, ≤80	>80, ≤97
≥620, <700	170	242	0
≥700, <740	50	171	-32
≥740	6	47	-25

Panel B: In Calculated G-fee vs. Actual G-fee
(with no credit for g-fee income)

	≤60	>60, ≤80	>80, ≤97
≥620, <700	16	74	58
≥700, <740	-8	38	30
≥740	-23	0	7

Panel C: In Calculated G-fee vs. FHFA G-fee
(with no credit for g-fee income)

	≤60	>60, ≤80	>80, ≤97
≥620, <700	21	17	-14
≥700, <740	6	14	-18
≥740	-4	3	-10

Panel D: In Allocated Capital
(with credit for g-fee income)

	≤60	>60, ≤80	>80, ≤97
≥620, <700	36	-92	-283
≥700, <740	-15	-42	-221
≥740	-15	-55	-140

Panel E: In Calculated G-fee vs. Actual G-fee
(with credit for g-fee income)

	≤60	>60, ≤80	>80, ≤97
≥620, <700	-2	29	20
≥700, <740	-16	9	5
≥740	-26	-14	-8

Panel F: In Calculated G-fee vs. FHFA G-fee
(with credit for g-fee income)

	≤60	>60, ≤80	>80, ≤97
≥620, <700	3	-28	-52
≥700, <740	-2	-15	-43
≥740	-7	-11	-25

To summarize: if guarantee fee income is included in calculating required g-fees, then the difference between our calculated g-fees and the actual g-fees charged is small. Thus, under the present system, for the [≥620, <700] FICO, [>80, ≤97]7 LTV bucket, the actual g-fee is 80 bps according to the FHFA calculations. Using our calculations, in which required capital is determined including g-fee income, the difference between our g-fee (assuming a 10 percent ROE) and actual g-fees is only 20 bps. This is a far cry from the FHFA's calculation, which requires a g-fee of 152 bps—72 bps more than the actual fee.

The FHFA release finds that g-fees on higher-quality loans are higher than needed to meet the target ROE, while lower-quality loans are charged too little (panels H and I of table 3). Determining required capital based on a stress scenario, as shown in panels B and C of table 4, we find the same pattern as FHFA, with similar magnitude: the higher-quality loans are charged more than is needed to meet the target ROE, the lower-quality loans too little. However, if we determine required capital taking into account g-fee income (panels E and F of table 4), then the differences are much smaller.

So, which is the right way to determine required capital? We believe it makes sense to take into account g-fee income. That income will be available to the entities to help cover losses even over the course of a severe stress scenario, reducing the need to tap into capital. Recognizing this, bank regulators include income in the calculation of bank capital. We see no logical reason why these principles should not also be applied to GSE required capital.[9] We provide a quick review of Basel III and Bank Stress Test methodology in the appendix.

Required G-Fees Are Sensitive to the Required Rate of Return

All the calculations thus far have assumed a 10 percent after-tax ROE. That may be correct for a private firm, but it may too high for an enterprise with public support. The Payroll Tax Act states that GSE capital should have the same "cost of capital allocated to similar assets held by other fully private regulated financial institutions." What this means is far from clear. Does this refer to the amount of capital, or the required return on capital, or both? More have argued it applies to the amount of capital.

In table 5, we show the effect on guarantee fees of lowering the rate of return from 10 percent, as we had assumed in tables 2 through 4, to 5 percent. G-fees will fall in all buckets, with the largest benefit going to the riskier loans, which have a higher capital allocation. At a 5 percent return on capital, assuming capital requirements take into account future g-fee income, the g-fee charge on the [≥620, <700] FICO, [>80, ≤97] LTV bucket is 72 bps, sharply lower than the 100 bps calculated at a 10 percent ROE. Moreover, the 72 bps calculated g-fee on this bucket is slightly lower than the 80 bps g-fee currently charged by the GSEs (panel H of table 3). This pattern is consistent for all buckets: at a 5 percent ROE, and taking g-fee income into account, current g-fees are too high, not too low.

More Thoughts on Allocating Capital: Should G-Fees Be Based on Holding Some Excess Capital?

As mentioned above, some have argued that the Payroll Tax Act means that GSEs and banks should be required to hold the same amount of capital. But banks take risks that put them in very different positions than the GSEs. For example, banks often lend to businesses on an unsecured basis—an activity that is an order of magnitude more risky than making secured loans to borrowers who put down at least 20 percent or whose loans are covered by mortgage insurance. Even if a bank did exclusively mortgage lending and held those loans in portfolio, its risk would not be nearly as geographically diverse as that of the GSEs.

If such a GSE-like bank did exist, it would face a capital requirement of 4 percent under current rules, going up to 6.5 percent under Basel III (8 percent of risk-weighted assets, with mortgages at a 50

percent risk weight, plus a 2.5 percent capital conservation buffer, although some of the requirement can be met with debt). Based on even the worst experience of the GSEs, such an institution would be grossly overcapitalized, as discussed in Goodman and Zhu (2013). Using bank capital requirements as the benchmark for GSE capital thus makes very little sense economically, and it is by no means clear that it is required by statute.

Another component of determining the appropriate capital level for a bank is setting a capital cushion in excess of the amount of capital required to withstand a stress situation. In the case of a fully private institution, especially a highly leveraged one like a bank, excess capital is needed to reassure the market of the bank's continued solvency. That is, the cushion exists to counteract the market creating a self-fulfilling prophecy by pulling deposits and refusing to lend if there were even a small probability of bank failure. It is very hard to argue that the GSEs, as institutions in conservatorship with the backing of the Treasury through the Preferred Stock Purchase Agreements (PSPAs), have "run" risk and therefore should be required to hold more capital than required to withstand serious stress.

Nevertheless, let us assume that a decision is made through policy that the GSEs should price guarantee fees as if they were holding a capital cushion above stressed losses. In line with bank capital requirements, assume g-fee pricing was based on a minimum capital requirement of 4 percent. In our stress case (and a 10 percent ROE), with no credit for g-fees, the total required capital was 292 bps (panel A of table 3). How should the 108 extra bps be allocated? Equally to all buckets? Proportionately to all buckets based on the amount of allocated risk?

The answer has huge implications for g-fees. We would argue that any excess capital required beyond the stressed amount should be allocated equally to all buckets, because it is an entity-level requirement, above and beyond the capital required to cover each bucket's risk. In this case, each 100 bps of excess capital would increase guarantee fees by about 13 bps, assuming a required 10 percent after-tax ROE. It would increase guarantee fees by about 5.6 bps, assuming a required 5 percent after-tax ROE. If one gives credit for future g-fee income, this calculation will bring the highest-FICO/lowest-LTV loans closer to actual g-fees, though still below them.

Finally, it is important to keep in mind that the GSEs do not actually hold capital, making this exercise a bit academic. Moreover, although private-sector firms commonly allocate capital internally to various business lines, it is hard to argue each FICO/LTV bucket is its own business line, though we and the FHFA have done so as part of this analysis of appropriate g-fees. We mention this as a reminder that this exercise is not actually intended to build sufficient capital to protect against risk, or even to mimic the private sector's approach to doing the same, but rather to determine pricing that is consistent with complicated policy objectives, only some of them risk-related.

This strongly argues that, once total g-fees are set to cover expected losses under stress, expenses, and the payroll tax surcharge, the GSEs' mission should be taken into account in determining the required amount of capital, the division of that capital among risk buckets and any required return on capital. Indeed, the GSEs' charters explicitly state that they are to engage in "activities relating to mortgages on housing for low- and moderate-income families involving a reasonable economic return that *may be less than the return earned on other activities*" (12 USC 1716 (3) [Fannie]; Section 301(b)(3), Pub L 91-351, as amended [Freddie]) (emphasis added).

Implications of This Analysis

Though the analysis above is simplified, it tests sensitivity to a range of assumptions. Our conclusion is that under reasonable assumptions, the g-fees and loan level pricing adjustments (LLPAs) are now

structured so the riskiest loans are paying close to their cost, and the safest loans are paying a good deal more than theirs.

There is thus no room to raise g-fees on the safest loans. No matter what capital allocation method we use, the g-fees for those loans are higher than can be justified by reasonable loss estimates and market rates of return on capital. Moreover, if g-fees are raised on these loans, the GSEs are apt to suffer from adverse selection: the safest loans will gravitate to bank balance sheets, leaving the GSEs with riskier loans and higher, not lower, losses. In fact, even at current g-fees, banks have made modest moves toward retaining their highest-quality loans. When banks calculate their optimal loan execution (hold on balance sheet versus sell to the GSEs), the fact that g-fees are high relative to losses often makes it more attractive to keep the loans. And raising g-fees on GSE loans is not going to revive a moribund private-label securities market, where significant structural and governance issues must be resolved.

What about raising LLPAs? The Housing and Economic Recovery Act of 2008 established an explicit GSE "duty to serve" and assigned the FHFA the task of writing regulations to define and implement that concept. The "duty to serve" regulations were never completed, though a draft was released in 2010. As long as Fannie and Freddie individually cover their costs, including the cost of capital, applying different expected returns on capital to different risk buckets is consistent with sections 301(b)(3) of the charter acts and with a "duty to serve," because it would help extend the GSEs' reach beyond the least-risky borrowers and loans. Based on our analysis, there is no need to steepen the LLPA curve.

Whether the LLPA curve should instead be flattened is a more difficult question. The GSEs are in a much better position to answer this question than we are, because their models are much more finely calibrated. But we would encourage the GSEs, given their mission, to allow for lower-than-market rates of return on capital on some loan buckets. We would also encourage them to reconsider the current practice of surcharging for some of the same risk covered by mortgage insurance on higher-LTV loans. This surcharge was driven by skepticism about the reliability of the private mortgage insurers as counterparties. As the mortgage insurers begin to meet the new eligibility standards, the surcharge should be removed.

The request for input also poses a related question: Should the GSEs continue to charge higher g-fees on low-credit-score/higher-LTV loans if the higher charge causes these loans to be insured through the Federal Housing Administration (FHA) and securitized through Ginnie Mae rather than through the GSEs? Although the GSEs do a form of risk-based pricing through their LLPAs and the cost of mortgage insurance, the FHA does almost none. As a result, higher-risk borrowers tend toward the FHA, and higher-credit-score borrowers go to the GSEs. (We follow this trend in our monthly Chartbook, page 33, http://www.urban.org/publications/413187.html; for a 95 LTV loan, the breakpoint is about a 700 FICO.) However, if the GSEs attempted to address the issue by eliminating risk-based pricing, and wanted to do it revenue-neutrally, they would be forced to raise rates on the most creditworthy borrowers. As discussed above, this would drive these loans to bank balance sheets. So, although there may be some room to modestly flatten the LLPA curve, it does not appear that substantially lowering fees on higher-credit-risk borrowers is feasible if total fees are to be held stable.

The FHFA has also asked for comments on state-level pricing adjustments, under which loans from the four states with the longest foreclosure timelines pay higher g-fees. Certainly, there are costs of delay as a result of judicial foreclosures with very long timelines (Cordell et al. 2013), and there is little evidence that these long timelines improve the outcome for the borrower (Gerardi, Lambie-Hanson, and Willen 2011). More work is definitely needed on this important issue. However, it is clear that increasing the g-fee on every borrower in the state is a very blunt and over inclusive tool. Moreover, the safest loans in

those states will be overcharged by a very large amount and will gravitate to bank portfolios. And the states that have the longest timelines now may not always have the longest timelines; if implemented, a mechanism for re-evaluation would be necessary. Better options might include slightly more stringent underwriting requirements or slightly deeper mortgage insurance coverage for those states. In any case, using state-level pricing adjustments is not the proper tool to address long and costly foreclosure timelines.

Finally, we think transparency in the g-fee pricing process is essential. Making the goals and assumptions explicit is critical to a more open dialogue, which in turn will make it easier to adjust g-fees as circumstances change.

Thank you very much for this opportunity to provide input.

Sincerely,

Laurie Goodman, Ellen Seidman, Jim Parrott, Jun Zhu

Appendix: Should Income Be Considered in Allocating Capital? Lessons from the Bank Capital Standards Say Yes

We have seen that we calculate very different amounts of allocated capital, and hence very different guarantee fees, depending on whether income is used to offset expected losses. Because much thought has been given to these issues in the context of setting bank capital standards, a quick review of current practices is in order. We find that income is used to offset expected losses in the determination of the amount of required capital and in the Federal Reserve's Stress Tests for large bank holding companies (BHCs).

Basel III bank capital requirements were set by allowing income to reduce the amount of stress capital required, as explained in a 2010 report by the Basel Committee on Banking Supervision. In the Basel III framework, "the regulatory minimum capital requirement is the amount of capital needed for a bank to be regarded as a viable going concern by creditors and counterparties, while a buffer can be seen as an amount sufficient for the bank to withstand a significant downturn period and still remain able to maintain minimum regulatory levels." Under this framework, the minimum was set by looking at the distribution of returns on risk-weighted assets and taking the left tail (the worst returns) as an indication of the amount of shock that market participants would expect banks to withstand. The rate of return was calculated on one-year returns, which reflect the fact that the market prices assets taking into account expectations of future income. The capital buffer is calibrated using both stress tests (which are based on net revenues—that is, taking income into account, as discussed in the next paragraph) and current and historical losses. Losses are determined by taking net income from the third quarter of 2007 through the fourth quarter of 2009 (2.5 years) for the large number of banks in the sample. By using a 2.5-year period, both current and future income is considered. And the report notes that average and median peak losses are markedly larger than cumulative losses over the entire period, because of both income earned on the assets and some recovery of losses.

In our analysis, we stressed Fannie and Freddie for their single worst vintage year (2007), not for their entire book of business. This is a much more stringent test than that used to calibrate bank capital. An offsetting effect is that we did not include a capital buffer.

As a result of the Dodd-Frank Act, the Federal Reserve is required to conduct an annual stress test of the large BHCs. The Board of Governors of the Federal Reserve System paper on the 2014 stress testing methodology described the rationale for the stress tests as follows: "The Federal Reserve expects large, complex bank holding companies (BHCs) to have sufficient capital to continue lending to support real economic activity while meeting their obligations, even under stressful economic conditions. Stress testing is one tool that helps bank supervisors measure whether a BHC has enough capital to support its operations during periods of stress." Stress testing is implemented by assuming two scenarios, one severely adverse and one adverse.

The Federal Reserve supervisory stress test methodology relies heavily upon earnings. "The framework begins with a projection of PPNR (projected pre-provisional net revenue). …The PPNR projection flows into the projection of pre-tax net income, which equals the PPNR projection, plus other revenue, minus provisions to the loan losses and changes in the allowance for loan and lease losses, other than temporary impairment losses on securities, losses on trading and counterparty positions from the global market shock, losses from the largest counterparty default, and losses on loans held for sale and measured under the fair-value option. … After-tax income (or loss) is calculated by applying a consistent tax rate to pre-tax net income (or loss) for all BHCs. Also, with each BHC's assumed capital actions under the Federal Reserve's Dodd-Frank stress test rules, after-tax net income is the primary determinant of

projected changes in equity capital, which in turn determines projected changes in the regulatory capital measures."

Thus, when we look at bank capital determination, be it in a Basel III context or in a bank stress test context, earnings are used to offset stressed loss scenarios, and the income-corrected loss scenarios are used to determine bank capital. While capital allocation for institutions in conservatorship is inherently arbitrary, lessons from the banking world suggest that the practice for that industry has been to include net income, or at least a few years of net income, in the determination of required capital.

References

Basel Committee on Banking Supervision. 2010. *Calibrating Regulatory Minimum Capital Requirements and Capital Buffers: A Top Down Approach*. Basel, Switzerland: Bank for International Settlements.

Board of Governors of the Federal Reserve System. 2014. *Dodd-Frank Stress Test 2014: Supervisory Stress Test Methodology and Results*. Washington, DC: Board of Governors of the Federal Reserve System.

Cordell, Larry, Liang Geng, Laurie Goodman and Lidan Yang. 2013. "The Cost of Delay." Working Paper 13-15. Philadelphia, PA: Research Department, Federal Reserve Bank of Philadelphia.

FHFA (Federal Housing Finance Agency). 2014. *Fannie Mae and Freddie Mac Guarantee Fees: Request for Input*. Washington, DC: FHFA.

Gerardi, Kristopher, Lauren Lambie-Hanson, and Paul S. Willen. 2011. "Do Borrower Rights Improve Borrower Outcomes? Evidence from the Foreclosure Process." Working Paper 17666. Cambridge, MA: NBER (National Bureau of Economic Research).

Goodman, Laurie, and Jun Zhu. 2013. "The GSE Reform Debate: How Much Capital Is Enough?" Washington, DC: Urban Institute.

Himmelberg, Charles P., Marty Young, Hui Shan, and Chris Henson. 2013. "Mortgage Guarantee Fee Pricing: It's About the Tail Risk." New York: Goldman Sachs, Credit Strategy Research, The Mortgage Analyst, April 12.

Notes

[1] The Temporary Payroll Tax Cut Continuation Act of 2011 requires Fannie Mae and Freddie Mac to increase g-fees 10 basis points on loans delivered between April 1, 2012, and October 1, 2021. The act also requires that g-fees be set using a "cost of capital allocated to similar assets held by other fully private regulated financial institutions" Section 401, Pub L 112-78 (December 23, 2011).

[2] To estimate loans that will go delinquent in the future, we applied the transition rate of loans that were current or 30 days delinquent that went 60 days delinquent from the latest year, for the next three years. We then took 75 percent of the sum of the two components, because not all loans that go 60 days delinquent will default; some will be modified or will self-cure. For the 2001 and 2007 vintages, the results are not all sensitive to the exact method of extrapolating lifetime default rates from to-date default rates, because most loans have already defaulted or prepaid. Thus, the defaults to date on the 2001 vintage are 1.3 percent of original balance; we estimate total lifetime defaults at 1.5 percent. Similarly, the defaults to date on the 2007 vintage are 11.4 percent; we estimate the total lifetime defaults at 13.9 percent.

[3] In these deals, severity is a step function: usually 10 or 15 percent for the first 1 percent of losses, 20 or 25 percent for the next 1 percent of losses, and 40 percent for losses above that (25 percent for loans with mortgage insurance).

[4] The average life of the mortgage is seven to eight years, which translates into a four-to-five-year duration. Using a four-year estimate of duration results in higher annualized loses, one can make the case that in a low rate environment, the duration of the credit guarantee is closer to five years than four years.

[5] Whether the reinvestment rate should be positive or zero is itself open to debate. If a firm holds capital, that capital is available to be reinvested, and the reinvestment rate is the rate on bank deposits, Treasuries, or other safe instruments. If the GSEs held capital, the reinvestment rate would be the cost of the borrowing they did not

have to do. Because the GSEs are in conservatorship and don't actually hold the capital, one could argue that the money goes toward the federal debt, so they should get credit because the Treasury needs to borrow less. . On the other hand, one could argue that they don't have capital, so they can't reinvest it and hence the reinvestment rate is zero. We go with the first approach and use a 2 percent reinvestment rate.

[6] We know g-fees = (pho x capital) + expected annual losses

capital = stress lifetime default losses – (g-fee x duration x [1 – (stressed default rate / 2)])

where pho = (after-tax return on capital/[1 – tax rate]) – reinvestment rate on capital.

Jointly solving for g-fees and capital, we find:

g-fee = (expected annual losses + [pho x stress lifetime default losses]) / (1 + [pho x duration x (1 – [stressed default rate / 2])]).

[7] We multiply the guaranty fee x duration x (1 – [stressed default rate / 2]), assuming that if there is a default, it occurs halfway through the expected life of the loan.

[8] The FHFA uses the term "allocated capital." We use "required capital" as more descriptive.

[9] The answer cannot be that the income is swept to the Treasury under the PSPAs. Those same agreements guarantee that the GSEs will never become insolvent, suggesting they need no capital at all. Thus, either the quest for capital requirements should be set aside while the PSPAs are in effect, or income should be included in any capital requirements.