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A Missing Piece of the Administrative Reform Puzzle: How the GSEs Generate Cross- Subsidies

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Introduction

With the passing of the eleventh anniversary of GSE conservatorship and the release of the administration's long-awaited housing finance reform plans, longstanding disagreements over the appropriate affordable housing obligations of Fannie Mae and Freddie Mac show no sign of abatement. The legislative stalemate will continue as long as the administration insists¹ on eliminating the GSEs' affordable housing goals that are required by law – a position supported by most Senate Banking Republicans, and opposed by a majority of Democratic members.² Specifically, Treasury calls on Congress to replace the goals regime with “a more efficient, transparent, and accountable mechanism for delivering tailored support to first-time homebuyers and low- and moderate-income, rural, and other historically underserved borrowers, with a portion of the associated funding potentially transferred to HUD to expand its affordable housing activities.”³ This is a nonstarter for Democrats because these GSE-generated resources would almost certainly result in reduced HUD appropriations, due to the fact that a Republican-controlled Congress would likely use the GSE-generated resources to slash appropriations for other HUD programs, resulting in no net increase in affordable housing funding. Research-based evidence on the effectiveness of the affordable housing goals process is mixed, but there is no gainsaying the fact that the GSEs are very active in the affordable lending space. In 2018 alone, Fannie and Freddie collectively funded more than a half million single-family purchase loans and more than 800,000 multifamily units that made these homes and apartments affordable to families with incomes of less than 80 percent of local area median income.⁴

Given that prospects for legislative reform are bleak, stakeholders have turned their collective attention to administrative reform, wondering, “What will Mark do?” Mark, of course, is the libertarian economist Mark Calabria, now six months in to a five-year appointment as independent director of the Federal Housing Finance Agency, the regulator and conservator of the GSEs. Calabria has become the most important voice in the room when it comes to charting the future course of Fannie Mae and

¹ US Department of the Treasury, “Housing Reform Plan Pursuant to the Presidential Memorandum Issued March 27, 2019,” Washington, DC, September 2019.

² To ensure that the management of these shareholder-owned companies should never consider affordable housing an optional activity, in 1992 Congress wrote into law that the GSEs' ongoing secondary market assistance must include “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 U.S. Code §1716).

³ US Department of the Treasury, “Housing Reform Plan.”

⁴ Michael Stegman, “Meeting America's Affordable Housing Needs Requires GSE Reform, and More,” *Housing Perspectives* (blog), Joint Center for Housing Studies, Harvard University, July 8, 2019, <https://www.jchs.harvard.edu/blog/meeting-americas-affordable-housing-needs-requires-gse-reform-and-more/>

Freddie Mac. Absent legislation, as long as the GSEs remain in conservatorship, or even if FHFA and Treasury successfully recapitalize and administratively release them from government control, Fannie Mae and Freddie Mac's existing affordable housing obligations must continue in one form or another.⁵ Absent legislation, Treasury wants Calabria to find a more efficient means by which the GSEs can seek to reach their affordable housing goals, which he has the authority to do.⁶

Where Cross-Subsidies Come From

To decode Treasury's administrative ask of FHFA requires an understanding of how the GSEs currently fund their affordable lending obligations. Over the years since the 2008 Financial Crisis, the GSEs, with approval from the FHFA, have put in place an opaque system of cross-subsidies that enable them to preserve the widespread availability of the thirty-year, fixed rate, prepayable mortgage to American homebuyers at the least possible cost, and to fund their affordable housing obligations. The GSEs generate these cross-subsidies in a two-step process. First, they target a lower-than-market-rate economic return on their low-income mortgage purchases, which they make up for by targeting a higher return on their other lending activities.⁷ Step two involves charging higher-credit-risk borrowers a lower guarantee fee than would be warranted purely on a risk-based pricing basis, while charging selected low-credit-risk borrowers a higher guarantee fee than is justified by their individual risk profile and loan type or purpose.

The most poorly understood part of the process is how the mix of the GSEs' loan product offerings underpins the entire cross-subsidy system. The measures FHFA might take to trim the GSEs' sails by paring back or eliminating selected GSE market-rate products are connected to the GSEs' ability to fulfill their affordable lending obligations because different loan types generate different amounts of net surpluses relative to their risk-based costs, and an unknown portion of these surpluses form the subsidy pool by means of which the GSEs fund their affordable housing obligations.

⁵ Michael Stegman and Phillip Swagel, "An Affordable Housing Fee in the Context of GSE Reform," The Milken Institute, Washington, DC, 2018, <https://assets1b.milkeninstitute.org/assets/Publication/Viewpoint/PDF/WP-An-Affordable-Housing-Fee.pdf>.

⁶ US Department of the Treasury, "Housing Reform Plan."

⁷ Jim Parrott, Michael Stegman, Phillip Swagel, and Mark Zandi, "Access and Affordability in the New Housing Finance System," The Urban Institute, Washington, DC, February 2018, https://www.urban.org/sites/default/files/publication/96461/access_and_affordability_in_the_new_housing_finance_system_2.pdf.

With this background, we turn to one of Director Calabria's most delicate challenges: how to achieve his and the administration's shared philosophically based goal of reducing the GSEs' outsized role in mortgage finance. A measure of that dominance is that through the second quarter of 2018, Fannie Mae and Freddie Mac owned or guaranteed 44 percent of all newly issued mortgages, a greater market share than in 2009 (41.9 percent) coming out of the Financial Crisis.⁸ The key is for Calabria not to buy into the siren song from some conservative think tanks that if only the GSEs backed away, unsubsidized private capital would swoop in to fill the void, and for him to wield a scalpel rather than a machete when it comes to trimming the GSEs' sails so as not to undermine their cross-subsidy and low-income lending capacity.

To help inform discussions of this issue, we divide the remainder of this essay in three parts, starting with a big-picture look at how the GSEs' combined \$4.8 trillion portfolio of single-family mortgage loans (in 2016) are allocated by loan-to-value ratio (LTV) and credit score, the two risk metrics they use to price their guarantee fees (Chart 1). We follow up with a deep discussion of how the GSEs price for risk, and then utilize the Andrew Davidson & Co. proprietary model to estimate the differential sources of net under- and over-charges by loan product; such estimates provide policy makers and regulators the information they need to make good policy decisions.

How the GSEs Price for Risk

A point of interest in Chart 1 is that across all LTVs, 59 percent of all single-family loans went to borrowers posing very low-credit risk, having credit scores of at least 740. About 20 percent of GSE loans by dollar volume funded very low down payment loans in 2016, but almost half of these also went to very high credit quality borrowers with credit scores of 740 or higher. In contrast, just 20 percent of all loans without regard to LTV went to borrowers with credit scores below 700, and only about 5 percent of all loans had an LTV of 95 percent or higher and borrower credit score below 700.

We define over- and under-charging as the difference between price and expected cost for loans with various risk profiles. FHFA and the GSEs set prices through loan level price adjustments (LLPA), which we define and discuss in detail below. The present value of expected future costs and stress

⁸ US Mortgage Market Statistics: 2018, <https://www.magnifymoney.com/blog/mortgage/u-s-mortgage-market-statistics-2018/>, and Richard X. Bove, "Fannie Mae: Who Owns the U.S. Mortgage Markets?" *ValueWalk*, March 2016, <https://www.valuwalk.com/2016/03/fannie-mae-who-owns-the-u-s-mortgage-markets/>.

losses that are factored into LLPAs are estimated by statistical models. To ensure the reasonableness of our analysis, we compare FHFA’s stress loss forecast to our own, which we also discuss later in this essay. We find FHFA’s stress losses and our modeled stress losses to be highly aligned.

Chart 1. Distribution of \$4.8 Trillion in GSE Single-Family Loans, by Risk Bucket⁹

<u>LTV%</u>	<u><= 60</u>	<u>60.1 - 70</u>	<u>70.1 - 79.9</u>	<u>80.0</u>	<u>80.1 - 89.9</u>	<u>90 - 94.9</u>	<u>>= 95</u>	<u>SUM</u>
FICO								
<= 620	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.2%	1%
621 - 640	0.2%	0.2%	0.3%	0.4%	0.1%	0.2%	0.4%	2%
641 - 660	0.3%	0.2%	0.5%	0.8%	0.2%	0.4%	0.8%	3%
661 - 680	0.5%	0.4%	0.9%	1.2%	0.4%	0.7%	1.6%	6%
681 - 700	0.7%	0.7%	1.3%	1.7%	0.5%	0.9%	2.2%	8%
701 - 720	0.8%	0.8%	1.4%	2.1%	0.6%	1.1%	2.6%	10%
721 - 740	1.2%	0.9%	1.8%	2.7%	0.8%	1.4%	3.3%	12%
<u>> 740</u>	<u>11.3%</u>	<u>7.1%</u>	<u>10.2%</u>	<u>13.1%</u>	<u>3.0%</u>	<u>4.9%</u>	<u>9.1%</u>	59%
SUM	15%	11%	17%	22%	6%	10%	20%	100%

Chart 2 shows FHFA’s modeled credit losses of GSE loans under severely stressed economic conditions across risk buckets. Even a cursory review reflects how modeled credit losses rise significantly as LTV increases and credit scores fall. These stress losses represent the GSEs’ required loss-absorbing capacity in the form of guarantee fees (LLPAs) and capital.

⁹ Fannie Mae Single-Family Loan Performance Data, <https://www.fanniemae.com/portal/funding-the-market/data/loan-performance-data.html>.

Chart 2. FHFA Estimates of Stress Losses (in bps) for Single-Family Loans, by Risk Bucket¹⁰

	<u><= 60</u>	<u>60.1 - 70</u>	<u>70.1 - 79.9</u>	<u>80.0</u>	<u>80.1 - 89.9</u>	<u>90 - 94.9</u>	<u>>=95</u>
<u>LTV% FICO</u>							
<= 620	108	293	437	652	779	958	1237
621 - 640	84	234	350	518	617	764	997
641 - 660	73	203	305	451	537	667	880
661 - 680	63	177	264	390	468	589	788
681 - 700	53	154	230	339	405	528	721
701 - 720	46	134	199	293	344	452	629
721 - 740	39	115	171	251	300	400	566
>= 740	31	95	141	206	244	326	380

Chart 3, taken from the Fannie Mae guide, shows the system of upfront fees that the GSEs charge geared to the modeled stress level credit losses reflected in Chart 2. The LLPAs defined above deviate from strict loan-level risk-based prices, due to the cross-subsidies discussed earlier. At the borrower's option, these modified risk-based fees can be paid up front, as part of closing costs, but generally, the fee is rolled into the mortgage rate to generate the higher dollar price proceeds required when the mortgage is securitized. To illustrate how the LLPA table should be read, consider a borrower with a credit score that falls between 660-679, who makes a down payment of \$40,000 (20 percent) on a \$200,000 house to occupy as a principal residence, who is seeking a mortgage of \$160,000 (an 80 percent LTV loan). The applicable LLPA is 2.75 percent of \$160,000, or \$4,400. Using a 5.0 present value multiplier, the mortgage rate rises 0.55 percent, raising the payment from \$764 to \$815 monthly using a 4.0 percent base mortgage rate.

¹⁰ FHFA Capital Rule NPR, Table 6, Part 1240, June 25, 2018

Chart 3. GSE Up-front Loan Level Price Adjustments, by Risk Bucket and Product¹¹

Table 1: All Eligible Mortgages – LLPA by Credit Score/LTV Ratio

Representative Credit Score	LTV Range									
	Applicable for all mortgages with terms greater than 15 years									
	≤ 60.00%	60.01 – 70.00%	70.01 – 75.00%	75.01 – 80.00%	80.01 – 85.00%	85.01 – 90.00%	90.01 – 95.00%	95.01 – 97.00%	>97.00 %	SFC
< 620	0.500%	1.500%	3.000%	3.000%	3.250%	3.250%	3.250%	3.750%	3.750%	N/A
620 – 639	0.500%	1.500%	3.000%	3.000%	3.250%	3.250%	3.250%	3.500%	3.500%	N/A
640 – 659	0.500%	1.250%	2.750%	3.000%	3.250%	2.750%	2.750%	2.750%	2.750%	N/A
660 – 679	0.000%	1.000%	2.250%	2.750%	2.750%	2.250%	2.250%	2.250%	2.250%	N/A
680 – 699	0.000%	0.500%	1.250%	1.750%	1.500%	1.250%	1.250%	1.500%	1.500%	N/A
700 – 719	0.000%	0.500%	1.000%	1.250%	1.000%	1.000%	1.000%	1.500%	1.500%	N/A
720 – 739	0.000%	0.250%	0.500%	0.750%	0.500%	0.500%	0.500%	1.000%	1.000%	N/A
≥ 740	0.000%	0.250%	0.250%	0.500%	0.250%	0.250%	0.250%	0.750%	0.750%	N/A

Table 2: All Eligible Mortgages – LLPA by Product Feature

PRODUCT FEATURE	LTV Range									
	≤ 60.00%	60.01 – 70.00%	70.01 – 75.00%	75.01 – 80.00%	80.01 – 85.00%	85.01 – 90.00%	90.01 – 95.00%	95.01 – 97.00%	>97.00%	
Adjustable-rate mortgage	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.250%	0.250%	0.250%	
Manufactured home	0.500%	0.500%	0.500%	0.500%	0.500%	0.500%	0.500%	0.500%	0.500%	
Second home*	0.000%	0.000%	0.000%	0.000%	0.000%	0.250%	0.250%	0.250%	0.250%	
Investment property	2.125%	2.125%	2.125%	3.375%	4.125%	4.125%	4.125%	4.125%	4.125%	
Cash-out refinance Representative Credit Score	LTV Range									
	≤ 60.00%	60.01 – 70.00%	70.01 – 75.00%	75.01 – 80.00%	80.01 – 85.00%	85.01 – 90.00%	90.01 – 95.00%	95.01 – 97.00%	>97.00%	
≥ 740	0.375%	0.625%	0.625%	0.875%	N/A	N/A	N/A	N/A	N/A	
720 – 739	0.375%	1.000%	1.000%	1.125%	N/A	N/A	N/A	N/A	N/A	
700 – 719	0.375%	1.000%	1.000%	1.125%	N/A	N/A	N/A	N/A	N/A	
680 – 699	0.375%	1.125%	1.125%	1.750%	N/A	N/A	N/A	N/A	N/A	
660 – 679	0.625%	1.125%	1.125%	1.875%	N/A	N/A	N/A	N/A	N/A	
640 – 659	0.625%	1.625%	1.625%	2.625%	N/A	N/A	N/A	N/A	N/A	
620 – 639	0.625%	1.625%	1.625%	3.125%	N/A	N/A	N/A	N/A	N/A	
< 620	1.625%	2.625%	2.625%	3.125%	N/A	N/A	N/A	N/A	N/A	

In addition to borrower-based risk-based prices, the GSEs also levy additional up-front risk-based charges on selected products or loan purposes, as illustrated in the second panel of Chart 3. So, for example, if instead of purchasing the house to live in, the same borrower wanted to buy the same

¹¹ Fannie Mae Loan-Level Price Adjustment (LLPA) Matrix, <https://www.fanniemae.com/content/pricing/llpa-matrix.pdf>

house as a rental investment, putting the same 20 percent down, the GSEs would charge an additional upfront fee of \$5,400 (3.375 percent). The borrower would pay an additional 0.85 percent in mortgage rate, raising the payment an additional \$73 per month.

Using FHFA’s own data, we can estimate the spread between LLPAs for selected loan products and what those up-front fees would be if they were set purely by their incremental modeled stress losses. Chart 4 shows FHFA’s Risk Factor Multipliers for various loan products. To illustrate the gap between actual LLPAs and what they would be on a strict risk basis, we see from the 1.2 multiplier for a single-family investor loan that, based on modeled stress losses, it is 20 percent riskier than the same loan would be to the same borrower if the home were owner-occupied (a risk multiplier of 1.0). Compare this spread with the actual pricing spread between the two scenarios. On a strict risk-based pricing basis, the investor should pay an incremental LLPA of 0.55 percent (.20*2.750), but is charged an additional 3.375 percent of the loan amount, which is six times greater.

Chart 4. FHFA Risk Factor Multipliers for Loan Products¹²

Risk Factor	Value or Range	Risk Multipliers by Single-Family Loan Segment				
		New Origination Loan	Performing Seasoned Loan	Non-Modified RPL	Modified RPL	NPL
Loan Purpose	Purchase	1.0	1.0	1.0	1.0	
	Cashout Refinance	1.4	1.4	1.4	1.4	
	Rate/Term Refinance	1.3	1.3	1.2	1.3	
	Other	1.0	1.0	1.0	1.0	
Occupancy Type	Owner Occupied or Second Home	1.0	1.0	1.0	1.0	1.0
	Investment	1.2	1.2	1.5	1.3	1.2
Property Type	1-Unit	1.0	1.0	1.0	1.0	1.0

Borrower-based (as opposed to product-based) risk-based fees have become a serious point of contention for various housing finance stakeholders for three reasons: First, many conservatives believe that cross-subsidies distort market signals by attenuating the link between loan pricing and credit risk. Second, there are questions about targeting based on need given that the cross-subsidies are based upon a borrower’s credit quality, while the GSEs’ affordable housing goals are denominated by borrower

¹²Federal Housing Finance Agency, Federal Register Volume 83, Number 137 (Tuesday, July 17, 2018), Table 11 to Part 1240, <https://www.govinfo.gov/content/pkg/FR-2018-07-17/html/2018-14255.htm>.

income. While the correlation of income and credit score is positive, a recent Federal Reserve study finds that “credit score distributions of high- and low-income consumers are both widely dispersed,” concluding that “income is not a strong predictor of credit scores, or vice versa.”¹³ This leads to the question of why a potentially significant share of lower-income borrowers with strong credit records should subsidize higher-income borrowers with weaker credit credentials.¹⁴ Finally, affordable housing advocates and the civil rights community take issue with risk-based pricing altogether as reflected in LLPAs because “evidence shows that borrowers with lower credit profiles and smaller down payments perform well when provided with safe and affordable mortgage loans.”¹⁵

How Changes in Product Availability and Size of GSE Footprint Can Shrink the Pool of Cross-Subsidies

This section gets to the heart of this essay, which concerns how reducing the GSEs’ footprint can unintentionally cause hemorrhaging in the existing pool of cross-subsidies upon which their broad mission and affordable lending programs rely. For our analysis, we focus on four loan products that are the most widely discussed candidates for pruning by the Trump administration.¹⁶ They are high-balance owner-occupied single-family loans, second homes, cash-out refinance loans, and investor loans, defined as non-owner-occupied single-family loans. For each of these loan types, we separately model distributions of over- and under-charging (i.e., cross-subsidies) across risk buckets.

Capital cost is the largest component of guarantee fees by far. Therefore, assessing the cross-subsidies inherent in guarantee fee pricing requires confidence in the estimates of stress losses that in turn drive capital requirements and LLPAs and guarantee fees. We address this requirement by comparing the array of FHFA’s stress losses by FICO/LTV bucket with estimates from our modeling in Chart 5. AD&Co’s stress loss profile is consistent with FHFA’s results at a 99.5 percent confidence level: a reasonable alignment test. At each of the three stages – stress losses, LLPAs, and capital – we

¹³ Rachael Beer, Felicia Ionescu, and Geng Li, “Are Income and Credit Scores Highly Correlated?” *Fed Notes*, August 13, 2018, <https://www.federalreserve.gov/econres/notes/feds-notes/are-income-and-credit-scores-highly-correlated-20180813.htm>.

¹⁴ For a further discussion of this issue, see Stegman and Swagel, “An Affordable Housing Fee in the Context of GSE Reform.”

¹⁵ Testimony of Michael D. Calhoun, President, Center for Responsible Lending, Before the United States Senate Committee on Banking, Housing, and Urban Affairs, Chairman’s Housing Reform Outline, Part 2, March 27, 2019, pp. 27-28.

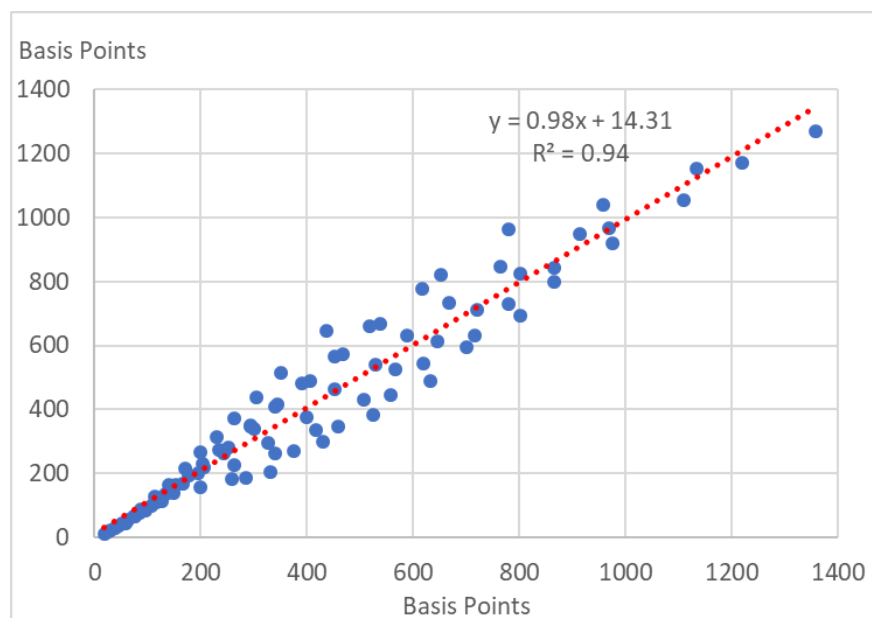
¹⁶ US Department of the Treasury, “Housing Finance Reform Plan.”

benchmark our model results with FHFA's results to ensure that our conclusions are well founded.¹⁷

These present value losses reflect the claims-paying resources the GSEs require from a combination of guarantee fees, LLPAs, and capital.

Chart 5. Comparing FHFA Stress Losses by FICO/LTV Bucket with AD&Co at 99.5%

Confidence¹⁸



Next, we model the GSEs' portfolio-wide distribution of average under- and over-charges for all single-family products combined by risk bucket, denominated in basis points (bps). These calculations depend importantly on assumptions about discount rate and the stress confidence level. With our modeling, we find that LLPAs' over- and under-charges are roughly balanced using 99 percent confidence level and a 12 percent pre-tax return on equity (ROE). These are reasonable values for a financial services firm in a limited market. Higher return thresholds would raise required LLPAs. In Chart 6 we show that loans in underpriced buckets (Subsidy > 0) are discounted by just under 5 basis points (a savings of \$5 a month on a \$160,000 loan), while loans in over-priced buckets (Subsidy < 0) are

¹⁷ Andrew Davidson & Co., Inc., has been a leading provider of mortgage risk analytics to institutional investors and regulators for over twenty-five years. The LoanDynamics Model (LDM) and Financial Engineering tools combine for a state-of-the-art forecasting platform, including consumer behavior, economic simulation, market pricing and capital theory. AD&Co products are used by the world's largest and most sophisticated investors across the mortgage ecosystem to better understand the inherent risks of credit-sensitive mortgages and related securities.

¹⁸ FHFA Capital Rule NPR, Table 6, Part 1240, June 25, 2018 and AD&Co modeling.

overcharged relative to risk by an average of 5.6 bps, or \$5 a month. These values seem well within potential modeling error and the above valuation assumptions.

Chart 6. Guarantee Fee Cross-Subsidies (in bps) for the GSE Portfolio, by Risk Bucket¹⁹

Total <u>LTV%</u>	\$4,801 <u><= 60</u>	Billion <u>60.1 - 70</u>	Basis Points					4.9		-0.7
			<u>70.1 - 79.9</u>	<u>80.0</u>	<u>80.1 - 89.9</u>	<u>90 - 94.9</u>	<u>>= 95</u>	-5.6		
FICO										
<= 620	-20	-27	-22	0	17	24	35			
621 - 640	-9	-20	-24	-16	1	7	17			
641 - 660	-10	-20	-27	-24	-9	7	15			
661 - 680	-1	-12	-19	-22	-8	7	15			
681 - 700	0	-7	-7	-10	9	19	26			
701 - 720	-4	-9	-8	-4	13	17	23			
721 - 740	-5	-8	-6	0	16	19	25			
<u>> 740</u>	-4	-7	-4	-2	10	12	15			

The Distribution of Cross-Subsidies by Loan Product²⁰

“Vanilla” and High-Balance Single-Family Loans

Chart 7 indicates that the vast majority of cross-subsidies (undercharges) go to broad middle-of-the-market borrowers, with what we refer to as “Vanilla” loans, which are single-family loans having an initial unpaid principal of \$400,000 or less, excluding cash-out refi, second homes, and investor loans. This cohort of \$2.8 trillion in unpaid principal receives a total of \$9.8 billion in internally generated subsidies. Deeper subsidy levels are concentrated in high-LTV, moderate- to high-credit score buckets, ranging between 15 and 26 bps (for savings of between \$14 a month and \$24 a month on a \$160,000 loan). Given that total overcharges for these loans are just a small fraction of the subsidies provided to Vanilla loan borrowers (\$1.3 billion vs. \$9.8 billion), this means that the major sources of subsidies to these consumers come from other loan products.

¹⁹ Fannie Mae Loan-Level Price Adjustment (LLPA) Matrix, <https://www.fanniemae.com/content/pricing/llpa-matrix.pdf>, and AD&Co modeling.

²⁰ These tables show annualized cross-subsidies by dividing present value differences between LLPA and cost by 5.

Chart 7. Guarantee Fee Cross-Subsidies for Vanilla Loans²¹

Vanilla LTV%	\$2,847 Billions						Million	
	<u><= 60</u>	<u>60.1 - 70</u>	<u>70.1 - 79.9</u>	<u>80.0</u>	<u>80.1 - 89.9</u>	<u>90 - 94.9</u>	<u>>= 95</u>	
FICO								
<u><= 620</u>	-2	-2	-6	10	17	24	35	
<u>621 - 640</u>	-4	-8	-18	-5	1	7	17	
<u>641 - 660</u>	-5	-7	-20	-14	-9	6	15	
<u>661 - 680</u>	4	-6	-16	-17	-8	7	15	
<u>681 - 700</u>	3	2	-1	-3	9	19	26	
<u>701 - 720</u>	2	-1	0	1	13	17	23	
<u>721 - 740</u>	2	2	5	6	16	19	25	
<u>> 740</u>	1	-1	4	2	10	12	15	
								\$9,774 -\$1,320

Chart 8, below, focuses on the distribution of cross-subsidies for the \$619 billion of high-balance loans on the GSEs' balance sheet, all of which have an initial unpaid principal of more than \$400,000. Similar to all Vanilla loans, internal subsidies are disproportionately focused on high-LTV, high-credit score borrowers. For policymakers looking to trim the GSEs' footprint by reducing conforming loan limits, the good news for affordable lending is that that this loan cohort only generates \$300 million in overcharges, compared to almost five times that amount in subsidies. Thus, eliminating high-balance lending by the GSEs would reduce the net subsidy need by more than \$1 billion.

Chart 8. Guarantee Fee Cross-Subsidies for High-Balance Loans²²

High Balance LTV%	\$619 Billion						Million	
	<u><= 60</u>	<u>60.1 - 70</u>	<u>70.1 - 79.9</u>	<u>80.0</u>	<u>80.1 - 89.9</u>	<u>90 - 94.9</u>	<u>>= 95</u>	
FICO								
<u><= 620</u>	-2	-2	-6	10	17	24	35	
<u>621 - 640</u>	-4	-8	-18	-5	1	7	17	
<u>641 - 660</u>	-5	-7	-20	-14	-9	6	15	
<u>661 - 680</u>	4	-6	-16	-17	-8	7	15	
<u>681 - 700</u>	3	2	-1	-3	9	19	26	
<u>701 - 720</u>	2	-1	0	1	13	17	23	
<u>721 - 740</u>	2	2	5	6	16	19	25	
<u>> 740</u>	1	-1	4	2	10	12	15	
								\$1,443 -\$300

²¹ These tables show annualized cross-subsidies by dividing present value differences between LLPA and cost by 5.

²² Ibid.

Second Homes

With total unpaid initial principal of just \$170 billion, second home loans represent a tiny source of GSE lending, but this niche product generates far more subsidies to borrowers (\$447 million) than overcharges (\$32 million), with the highest average borrower subsidies going to very-high-LTV borrowers at all credit scores (Chart 7). Whatever FHFA decides to do about second homes, that decision will do little to impair the current system of cross-subsidies.

Chart 9. Guarantee Fee Cross-Subsidies for Second Homes²³

2nd Home <u>LTV%</u>	\$170 <u><= 60</u>	Billion					Million <u>90 - 94.9</u>	\$447 <u>>= 95</u>	-\$32
		<u>60.1 - 70</u>	<u>70.1 - 79.9</u>	<u>80.0</u>	<u>80.1 - 89.9</u>				
FICO									
<u><= 620</u>	-2	-2	-6	10	23	25	36		
621 - 640	-2	-4	-11	3	9	12	22		
641 - 660	-4	-4	-14	-7	-2	10	20		
661 - 680	5	-3	-11	-11	-2	9	18		
681 - 700	4	4	3	2	15	20	28		
701 - 720	3	1	3	5	17	17	24		
721 - 740	2	4	8	9	20	19	25		
<u>> 740</u>	1	0	5	4	12	9	13		

Cash-Out Refinance and Investor Loans

Spoiler Alert! These two loan products generate the vast majority of net overcharges sufficient to fund the entirety of the GSEs' cross-subsidy needs. The irony, of course, is that these are the loan products most often pointed to by those who believe the GSEs are overreaching into areas of the market that should be funded by private unsubsidized capital. Chart 10 provides the specifics.

²³ These tables show annualized cross-subsidies by dividing present value differences between LLPA and cost by 5.

Chart 10. Guarantee Fee Cross-subsidies for Cash-Out Refi and Investor Loans²⁴

Cash Out LTV%	\$890				\$0		-\$6,095		Investor LTV%	\$275				\$0		-\$5,708	
	<= 60	60.1 - 70	70.1 - 79.9	80	<= 60	60.1 - 70	70.1 - 79.9	80		<= 60	60.1 - 70	70.1 - 79.9	80				
FICO									FICO								
<= 620	-32	-44	-41	-31					<= 620								
621 - 640	-14	-33	-36	-50					621 - 640								
641 - 660	-16	-33	-40	-51					641 - 660								
661 - 680	-7	-23	-28	-41					661 - 680								
681 - 700	-3	-17	-15	-27					681 - 700	-43	-39	-40	-48				
701 - 720	-4	-17	-13	-12					701 - 720	-45	-47	-54	-65				
721 - 740	-5	-15	-9	-9					721 - 740	-46	-46	-57	-75				
> 740	-6	-12	-6	-11					> 740	-38	-45	-54	-78				

Note: The GSEs do not buy or guarantee cash-out refinance loans at greater than an 80 percent LTV.

For neither of what we refer to as “penalty-priced” products is there a single risk bucket in which borrowers pay a subsidized guarantee fee. To give readers a sense of how much more costly these loans are relative to their true costs, a borrower in the highest credit score bucket (>740) would pay 78 basis points for an 80 percent LTV cash-out refinance loan, which translates to an additional cost of about \$74 a month on a \$160,000 loan.

We estimate that cash-out refinance loans generate a net of more than \$6 billion in overcharges relative to modeled credit losses, while investor loans generate nearly that much, more than \$5.7 billion. This is no accident: it is by design, as we indicated in our earlier comparison of their respective LLPAs and risk multipliers. To underscore that FHFA’s penalty pricing policies for these products is no accident, we refer the reader to the Regulator’s 2016 guarantee fee report to Congress that describes the action it took to offset reductions in LLPAs for other products:

Due to improvements in the housing market, the 25 basis point upfront adverse market charge in place since 2008 was removed. To offset the revenue lost from the removal of the adverse market charge, FHFA made targeted increases in upfront fees for a subset of loans, including some higher-risk loan segments (cash-out refinances, jumbo conforming loans, investment properties, and loans with secondary financing) and those with both high credit scores and low LTV ratios.²⁵

²⁴ These tables show annualized cross-subsidies by dividing present value differences between LPA and cost by 5.

²⁵ Federal Housing Finance Agency, “Fannie Mae and Freddie Mac Single-Family Guarantee Fees in 2017,” Washington, DC, December 2018, p. 6, https://www.fhfa.gov/AboutUs/Reports/ReportDocuments/GFee-Report_12-10-18.pdf.

As we noted above, cash-out refinances and investor loans are the two products most frequently cited as prime examples of GSE overreach. Conservative think tanks and others argue that the GSEs have no business doing this kind of lending, and that private capital without government backing would readily step into this business in a big way if only the GSEs would back off. However, the market says otherwise, as do our modeling and FHFA's own data. The only reason that the GSEs can overprice the guarantee fee for cash-outs and investor loans to the tune of \$14 billion, and by as much as 78 bps for the highest-credit-quality borrowers, is the absence of private market liquidity. This situation suggests strongly that the GSEs are providing benefit to investor and cash-out loans even though they price well above cost. Compare this with the growing inclusion of the highest-credit-quality single-family conforming loans into jumbo loan securitizations. This demonstrates that GSE penalty pricing of its lowest-risk business is limited by private label securities execution.

Conclusions

Over the years, the GSEs, in collaboration with FHFA, have adopted a complex, opaque set of modified loan level risk-based prices that are interwoven into the product mix. As administrative reform now takes center stage, and the administration and FHFA are both intent on reducing the government's role in mortgage finance, we must resist the temptation to take the easy way out by lopping off cash-out refi and investor loans from the GSEs' menu of products, lest such changes drastically undermine their middle class mission and their ability to fulfill their affordable housing obligations.

We are unable to establish the extent to which GSE cross-subsidies go to LMI borrowers because undercharges are largely associated with higher credit risk borrowers, while FHFA predominately denominates affordable housing goals in terms of borrower incomes. Although research suggests "that the credit score distributions of high- and low-income consumers are both widely dispersed, confirming the notion that income is not a strong predictor of credit scores, or vice versa."²⁶ One independent estimate is that "approximately 23% of those receiving a subsidy under the current system are not LMI

²⁶ Rachael Beer, Felicia Ionescu, and Geng Li, Are Income and Credit Scores Highly Correlated? Feds Notes, August 13, 2018. <https://www.federalreserve.gov/econres/notes/feds-notes/are-income-and-credit-scores-highly-correlated-20180813.htm>

households.”²⁷ Among other things, this longstanding lack of alignment between these subsidies and borrower incomes calls for greater transparency from FHFA’s new director on the sources and recipients of cross-subsidies than was forthcoming from previous regimes, and a more vigorous public debate on how best to target GSE-generated resources for affordable housing.

²⁷Jim Parrott, Michael Stegman, Phillip Swagel and Mark Zandi, Access and Affordability in the New Housing Finance System, Urban Institute, Washington, DC Feb 2018.
https://www.urban.org/sites/default/files/publication/96461/access_and_affordability_in_the_new_housing_finance_system_2.pdf.

Appendix. Comparison of FHFA and AD&CO Model Assumptions Used in the Analysis

GSE Portfolio Volume in Billions, Subsidy in Millions & Percent

SUBSIDY / -OVERCHARGE

Product Segment	Volume (B)	SUBSIDY / -OVERCHARGE			Guarantee Fee		
		Under charge	Over charge	Net	Under	Over	Net
Vanilla	\$2,847	\$9,774	-\$1,320	\$8,454	0.07%	-0.01%	0.06%
<u>High balance</u>	<u>\$619</u>	<u>\$1,443</u>	<u>-\$300</u>	<u>\$1,143</u>	<u>0.05%</u>	<u>-0.01%</u>	<u>0.04%</u>
Total	\$3,465	\$11,217	-\$1,620	\$9,597	0.06%	-0.01%	0.06%
Cash out < 80	\$890	\$0	-\$6,095	-\$6,095	0.00%	-0.14%	-0.14%
Investor	\$275	\$0	-\$5,708	-\$5,708	0.00%	-0.41%	-0.41%
<u>2nd</u>	<u>\$170</u>	<u>\$447</u>	<u>-\$32</u>	<u>\$416</u>	<u>0.05%</u>	<u>0.00%</u>	<u>0.05%</u>
Total	\$1,336	\$447	-\$11,835	-\$11,387	0.01%	-0.18%	-0.17%
Grand Total	\$4,801	\$11,664	-\$13,455	-\$1,790	0.049%	-0.056%	-0.007%

Assumptions:

MI is 50% effective in stress

99% Confidence and 12% cost of capital

2016 FNMA distribution by FICO, LTV, C/O, High Bal, 2nd, Investor

\$4.8 Trillion total GSE portfolio

Use AD&Co model applied to CRT market: Capital Charge method

GSE LLPAs

QM Patch calculation is based on Q4 2017 share and FICO/LTV distribution: 25% of vol

Stress losses 97% correlated with FHFA Capital Rule results